

JANE'S POCKET BOOK OF RECORD- BREAKING AIRCRAFT

Compiled by **KENNETH MUNSON**

Edited by **JOHN W.R. TAYLOR**



**JANE'S POCKET BOOK OF
RECORD-BREAKING AIRCRAFT**

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**Compiled by Kenneth Munson
Edited by John W.R. Taylor FRHistS, MRAeS, FSLAET**

COLLIER BOOKS

A Division of Macmillan Publishing Co., Inc.
New York

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Macmillan Publishing Co., Inc.
866 Third Avenue, New York, N.Y. 10022
Collier Macmillan Canada, Ltd.

Library of Congress Cataloging in Publication Data

Main entry under title:

Jane's pocket book of record-breaking aircraft.

Includes index.

1. Airplanes, Racing. 2. Airplanes—Speed records.

I. Munson, Kenneth. II. Taylor, John William Ransom.

TL685.6.J36 1981 629.133 81-1635

ISBN 0-02-080630-2 AACR2

First Collier Books Edition 1981

Printed in the United States of America

FOREWORD

The aircraft described and illustrated in this Pocket Book are among the most significant in aviation history. More than seventy years have elapsed since Alberto Santos-Dumont climbed into his 14*bis* tail-first biplane and set the first-ever air speed record, which modern technologists might calculate as Mach 0.0337 or 3.37 per cent of the speed of sound at sea level in international standard atmosphere conditions. The speed worked out by official observers at Bagatelle, Paris, on that day in November 1906 was 41.27 km/h (25.65 mph); the absolute speed record recognised by the Fédération Aéronautique Internationale (FAI) in mid-1978 is more than 85 times faster. There are other differences. Santos-Dumont flew in only one direction. Modern speed records in this category represent the average of two runs in opposite directions, over a precisely measured course, and timed by approved techniques.

Regulations laid down by the FAI have changed periodically, in pace with progress and new developments in aviation. At one time all absolute speed records had to be set over a 3 km (1.864 mile) course, at a height no greater than 100 m (328 ft). This altitude, at which turbulence was almost inevitable, became hazardous when speed records began to exceed the speed of sound. As a result, absolute speed records have been set over a 15/25 km (9.32–15.53 mile) course at unlimited height since the mid-fifties; although Darryl Greenamyer of America achieved nearly 1,000 mph (1,600 km/h) when setting the current low-altitude record in the Red Barn F-104RB.

The total number of official records that may be set at any one time has also changed with the passing years. There are now separate series of records open to men and women in each category; for gas and hot air balloons, airships, powered aeroplanes, gliders and helicopters; for aeroplanes powered by piston-

engines, turbojets, turboprops and rockets; for landplanes, seaplanes and amphibians; and even for model aeroplanes, parachuting, jet-lift aircraft, convertiplanes, man-powered aircraft, space vehicles, hovercraft and tilt-wing/tilt-engine types. The records, duplicated for various take-off weight categories, cover everything from absolute speed, height and distance to payload-carrying, time-to-height, speed over recognised city-to-city routes, and accumulated time spent outside a space vehicle on the surface of the Moon or a planet.

A full list of current FAI-approved records, excluding point-to-point speeds, includes about 94 for balloons, 439 for powered aeroplanes, 38 for gliders, 6 for motor gliders, 104 for helicopters and autogyros, and 52 for space vehicles. Intense East/West rivalry is reflected in the fact that the seven absolute records for powered aeroplanes were divided between the USA (six) and Soviet Union (one) in mid-1978. The uniqueness of certain aircraft is reflected in the fact that, for example, the Soviet Beriev M-12 holds all 15 records registered for turboprop seaplanes and all 21 for turboprop amphibians. Longest-standing aeroplane record is the speed of 629.37 km/h (391.072 mph) over a 100 km (62.14 mile) course set up by Cassinelli of Italy in the Macchi C.72 piston-engined seaplane on 8 October 1933; but current balloon records date back to 1913.

This book describes and illustrates all aeroplanes that have set absolute speed, height and straight-line distance records, wherever possible with a photograph of the individual aeroplane used. As these did not fill the 250 pages that make up each aircraft Pocket Book, they are supplemented by some of the more interesting aircraft that have set other significant records. The result, we believe, is a book as unique and fascinating as its subject.

JWRT/KM



(France)

SANTOS-DUMONT 14-*bis*

First free take-off 13 September 1906
Single-place experimental tail-first biplane

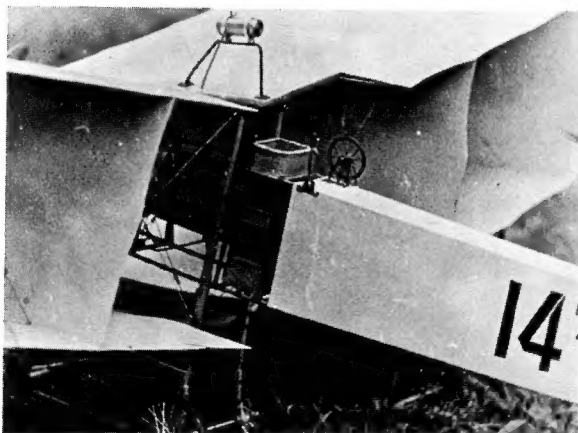
Power plant: One Antoinette eight-cylinder Vee-type piston engine (24 hp for first take-off, then exchanged for one of 50 hp)

Wing span: 11.20 m (36 ft 9 in)

Length: 9.70 m (31 ft 9 $\frac{7}{8}$ in)

Height: approx 3.40 m (11 ft 1 $\frac{7}{8}$ in)

Wing area: 52.00 m² (559.72 sq ft)



T-O weight: 300 kg (661 lb)

Speed: approx 21.5 knots (40 km/h; 25 mph)

Record for speed:

12 Nov 1906

Alberto Santos-Dumont Bagatelle (France) 22.281 knots (41.292 km/h; 25.658 mph)

Record for distance:

12 Nov 1906

Alberto Santos-Dumont Bagatelle (France) 0.12 nm (0.22 km; 0.14 miles)

Alberto Santos-Dumont (1873-1932) was a wealthy expatriate Brazilian who moved to Paris in 1898. In that same year he built the first of a series of small airships, numbered between 1 and 14. In No 6, on 19 October 1901, he won a prize of 125,000 francs offered by Henry Deutsch de la Meurthe for the first seven-mile flight from St Cloud, around the Eiffel Tower and back within 30 minutes. Turning to powered aeroplane experiments, he built this large tail-first biplane, which he designated 14-*bis* because first tests were made with the airframe suspended under his No 14 airship. The 14-*bis* made ten flights. Those on 23 October 1906 (60 m; 197 ft) and 12 November (above) are recognised officially as the first flights by a powered aeroplane in Europe.

Octagonal ailerons were fitted in the outer wing-cells (opposite page) before the 12 November flights. Close-up (left) shows the wicker basket in which the diminutive pilot stood



First flight 30 September 1907

Single-seat biplane

Power plant: One Antoinette eight-cylinder Vee-type piston engine (50 hp)

Wing span: 10.20 m (33 ft 5½ in)

Length: 11.40 m (37 ft 4¾ in)

Wing area: 40.80 m² (439.17 sq ft)

T-O weight: 520 kg (1,146 lb)

Speed: 36 knots (67 km/h; 42 mph)

Record for speed:

26 Oct 1907

Henry Farman Issy-les-Moulineaux (France) 28.456 knots (52.700 km/h; 32.746 mph)

Records for distance in a closed circuit:

26 Oct 1907

Henry Farman Issy-les-Moulineaux (France) 0.415 nm (0.770 km; 0.478 miles)

13 Jan 1908

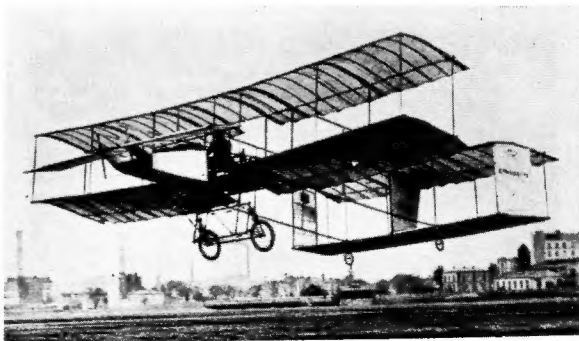
Henry Farman Issy-les-Moulineaux (France) 0.540 nm (1,000 km; 0.621 miles)

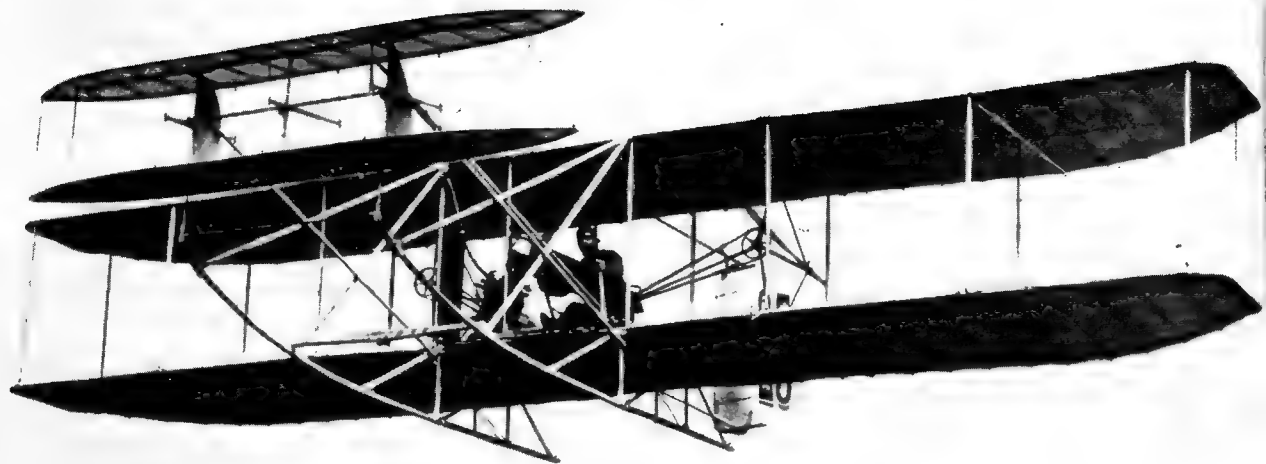
21 Mar 1908

Henry Farman Issy-les-Moulineaux (France) 1.081 nm (2.004 km; 1.245 miles)

Henry Farman (opposite, left). The Voisin-Farman I is shown in its original form (right) and as modified, with smaller tail unit, for the January 1908 circular flight (opposite, right)

Gabriel (1880–1973) and Charles Voisin (1882–1912) were the first manufacturers to build aeroplanes commercially for other pilots to fly. Outstanding among those who flew Voisin biplanes was Henry Farman (1874–1958), an Englishman domiciled in France. After setting officially recognised records for speed and distance in October 1907, Farman covered a distance of 0.556 nm (1.030 km; 0.640 miles) in the Voisin on 9 November; this was the first time anyone but the Wright brothers remained airborne for more than one minute, the flight time being 1 min 14 sec. The 13 January 1908 flight gained for Farman a Deutsch-Archdeacon Prize of 50,000 francs for the first officially observed circular flight of 1 km in Europe.





First flight 8 August 1908

Two-seat biplane

Power plant: One Wright four-cylinder in-line piston engine (30 hp)

Wing span: 12.50 m (41 ft 0 in)

Length: 8.84 m (29 ft 0 in)

Height: approx 2.44 m (8 ft 0 in)

Wing area: 47.38 m² (510.00 sq ft)

Weight empty: 363 kg (800 lb)

T-O weight: 454-544 kg (1,000-1,200 lb)

Max speed: 30-35 knots (56-64 km/h; 35-40 mph)

Record for speed:

20 May 1909

Paul Tissandier Pau 29.576 knots (54.810 km/h;

34.057 mph)

Records for height:

18 Oct 1909

Comte Charles de Lambert Paris 300 m (984 ft)

14 Jun 1910

Walter H. Brookins Indianapolis 1,335 m (4,380 ft)

Eugène Lefebvre in the Wright Model A in which he covered 30 km in 30 min 29 sec at Reims in August 1909. Two weeks later he was killed in a similar aircraft

10 Jul 1910

Walter H. Brookins Atlantic City 1,900 m (6,234 ft)

31 Oct 1910

Ralph Johnston Belmont Park (NY) 2,960 m (9,711 ft)

Records for distance in a closed circuit:

21 Sep 1908

Wilbur Wright Auvours 35.938 nm (66.600 km;

41.383 miles)

18 Dec 1908

Wilbur Wright Auvours 53.853 nm (99.800 km;

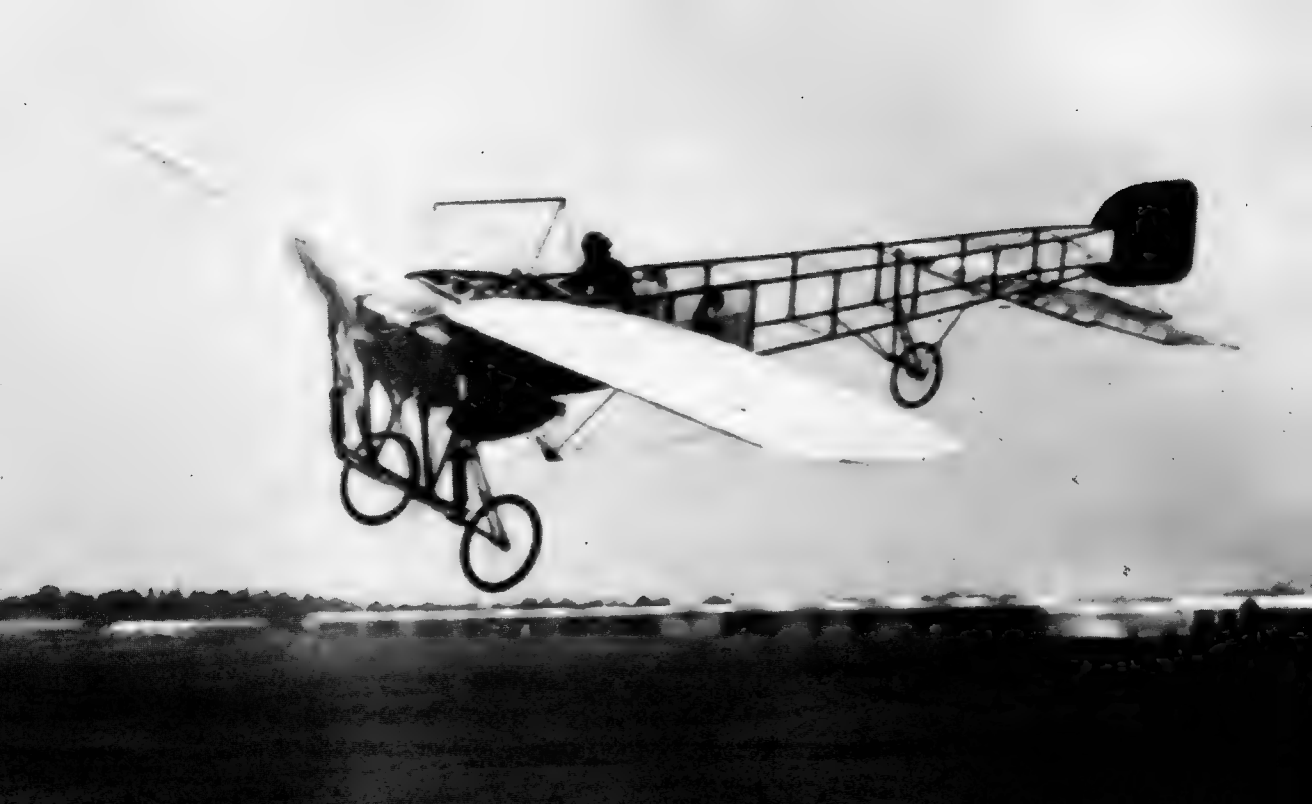
62.013 miles)

31 Dec 1908

Wilbur Wright Auvours 67.289 nm (124.700 km;

77.485 miles)

The original Model A, or 'standard' 1907-09 Wright biplane, was the fourth powered aeroplane built by the Wright brothers. It was similar in configuration to the famous Wright Flyer used for the first powered, controlled and sustained flights by an aeroplane on 17 December 1903, except that it carried two seated persons as opposed to one prone. The first Model A made more than 160 flights in France in 1908-09. Another served briefly with the US Signal Corps in 1909 as the world's first military aeroplane, and is now preserved in the US National Air & Space Museum.



BLÉRIOT TYPES XI and XII



First flight 23 January 1909: Data for Type XI (July 1909)

Single-seat monoplane

Power plant: One Anzani three-cylinder semi-radial piston engine (25 hp)

Wing span: 7.80 m (25 ft 7 $\frac{1}{8}$ in)

Length: 8.00 m (26 ft 3 in)

Height: approx 2.60 m (8 ft 6 $\frac{3}{8}$ in)

Wing area: 14.00 m² (150.69 sq ft)

Weight empty: 210 kg (463 lb)

T-O weight: 300 kg (661 lb)

Speed: approx 40.5 knots (75 km/h; 47 mph)

Records for speed:

24 Aug 1909

Louis Blériot Reims 40.102 knots (74.318 km/h;
46.179 mph)

28 Aug 1909

Louis Blériot Reims 41.547 knots (76.995 km/h;
47.842 mph)

10 Jul 1910

Léon Morane Reims 57.472 knots (106.508 km/h;
66.181 mph)

29 Oct 1910

Alfred Leblanc New York 59.225 knots (109.756 km/h;
68.199 mph)

Opposite: Bartolomeo Cattaneo of Italy setting British distance and duration records of 122.62 nm (227.09 km; 141.11 miles) in 3 hr 11 min at Lanark, in a Blériot XI, in August 1910. Left: Louis Blériot greets his wife from the quayside at Dover after his Channel flight



12 Apr 1911

Alfred Leblanc Pau 60.328 knots (111.801 km/h;
69.470 mph)

12 Jun 1911

Alfred Leblanc Étampes 67.451 knots (125.000 km/h;
77.671 mph)

Records for height:

11 Aug 1910

Armstrong Drexel Lanark 2,012 m (6,601 ft)

3 Sep 1910

Léon Morane Deauville 2,582 m (8,471 ft)

8 Sep 1910

Georges Chavez Issy-les-Moulineaux 2,587 m
(8,488 ft)

- Oct 1910

Armstrong Drexel Philadelphia 2,880 m (9,449 ft)

8 Dec 1910

Georges Legagneux Pau 3,100 m (10,171 ft)

9 Aug 1911

Capitaine Félix Etampes 3,190 m (10,466 ft)

4 Sep 1911

Roland Garros St Malo 3,910 m (12,828 ft)

*6 Sep 1912

Roland Garros Houlgate 4,900 m (16,076 ft)

11 Mar 1913

M. Perreyon Buc 5,880 m (19,291 ft)

Records for distance in a closed circuit:

20 Jul 1910

Jan Olieslagers Mourmelon 211.930 nm (392.750 km;
244.043 miles)

11 Dec 1910

Georges Legagneux Pau 278.382 nm (515.900 km;
320.565 miles)

*80 hp engine

The Blériot XI is best remembered as the aircraft in which Louis Blériot (1872-1936) made the first successful crossing of the English Channel in a heavier-than-air flying machine, on 25 July 1909. The flight from Les Baraques (Calais) to Dover lasted 36½ min. Many more Type XIs were built for sporting and military use. One flown by Italian Captain Piazza was used for the first-ever operational flight by a military aeroplane on 22 October 1911, during the Italo-Turkish War in North Africa. The first two speed records listed were set by the Type XII, all others by Type XIs, with engines of up to 100 hp.

Blériot survived many spectacular crashes. This photograph shows the still-smoking wreckage of his Model XII at Reims on 29 August 1909. With its original 35 hp engine, it had been the first aeroplane to fly with two passengers (Santos-Dumont and Fournier) at Issy on 12 June 1909. Re-engined with a 60 hp E.N.V., it enabled Blériot to win the prize for the fastest lap of the 10 km Reims circuit, in 7 min 48 sec, on the 28th



(USA)

CURTISS GOLDEN FLYER

First flight 25 August 1909

Single-seat biplane

Power plant: One Curtiss eight-cylinder Vee-type piston engine (50 hp)

Wing span: 9.98 m (32 ft 9 in) over ailerons

Length: 8.69 m (28 ft 6 in)

Height: approx 2.74 m (9 ft 0 in)

Wing area: 23.97 m² (258.00 sq ft)

Weight empty: 249.5 kg (550 lb)

T-O weight: 376 kg (830 lb)

Speed: 39 knots (72 km/h; 45 mph)

Record for speed:

23 Aug 1909

Glenn H. Curtiss Reims 37.676 knots (69.821 km/h;
43.385 mph)

Greatest of America's pioneer designer/pilots after the Wright brothers, Glenn Curtiss (1878-1930) began his aviation career as Director of Experiments for the Aerial Experiment Association, led by Dr Alexander Graham Bell, inventor of the telephone. Each member of the Association was responsible for one aircraft, and the third powered biplane to fly was Curtiss's June Bug in which he won the *Scientific American* Trophy for the first public flight in the USA on 4 July 1908. Distance covered was 0.84 nm (1.55 km; 0.96 miles) in 1 min 42.5 sec. In

the following year, Curtiss built the Gold Bug, in which he won the second *Scientific American* Trophy with a flight of 21.5 nm (40 km; 24.7 miles) in 52 min. The Golden Flyer (above) which he piloted at the Reims International Meeting was similar. In addition to setting an official world record, it won the speed prize at 40.9 knots (75.7 km/h; 47 mph) on 29 August, and the Coupe Gordon Bennett.



Opposite: Golden Flyer at Reims, 26 August 1909



First flight 27 July 1909

Single/two-seat monoplane

Power plant: One Antoinette eight-cylinder Vee-type piston engine (60 hp)

Wing span: 12.80 m (42 ft 0 in)

Length: 11.50 m (37 ft 8¾ in)

Height: 3.00 m (9 ft 10 in)

Wing area: 50.00 m² (538.20 sq ft)

T-O weight: 590 kg (1,301 lb)

Max speed: 38 knots (70 km/h; 43.5 mph)

Record for speed:

23 Apr 1910

Hubert Latham Nice 41.862 knots (77.579 km/h; 48.205 mph)

Records for height:

29 Aug 1909

Hubert Latham Reims 155 m (508.5 ft)

1 Dec 1909

Hubert Latham Châlons 453 m (1,486 ft)

7 Jan 1910

Hubert Latham Châlons 1,000 m (3,281 ft)

7 Jul 1910

Hubert Latham Reims 1,384 m (4,541 ft)

Record for distance in a closed circuit:

*26 Aug 1909

Hubert Latham Bétheny 83.434 nm (154.620 km; 96.076 miles)

**Antoinette IV*

Born in Paris of English parents, Hubert Latham (1883–1912) took up the 'dangerous' sport of flying when his doctor told him he had only one year to live. He was killed several years later by a wounded buffalo while on safari in Africa. Meanwhile, he became one of history's great pilots. But for engine failure, he might have crossed the Channel before Blériot, in his Antoinette IV, on 19 July 1909. In a second attempt, on 27 July, he was one mile from the cliffs of Dover when his engine failed. At the Reims International Meeting, Latham won the height competition (above) in the Antoinette VII that had been used for his second Channel attempt, and also set the first-ever speed record over 100 km, at 36 knots (67 km/h; 42 mph).

Antoinette IV of Hubert Latham over the plains at Bétheny, Reims, in August 1909. This differed from the Antoinette VII in having a 50 hp engine and ailerons instead of wing-warping. Both aircraft had been rebuilt after ditching in the Channel



First flight 6 April 1909

Single-seat biplane

Power plant: One Gnome seven-cylinder rotary piston engine (50 hp)

Wing span: 10.00 m (32 ft 9¾ in)

Length: 12.00 m (39 ft 4½ in)

Height: approx 3.50 m (11 ft 6 in)

Wing area: 40.00 m² (430.56 sq ft)

Weight empty: 450 kg (992 lb)

T-O weight: 550 kg (1,213 lb)

Speed: 32.5 knots (60 km/h; 37 mph)

Records for height:

12 Jan 1910

Louis Paulhan Los Angeles 1,209 m (3,967 ft)

1 Oct 1910

H. Wynmalen Mourmelon 2,780 m (9,121 ft)

8 Jul 1911

M. Loridan Châlons 3,177 m (10,423 ft)

Records for distance in a closed circuit:

27 Aug 1909

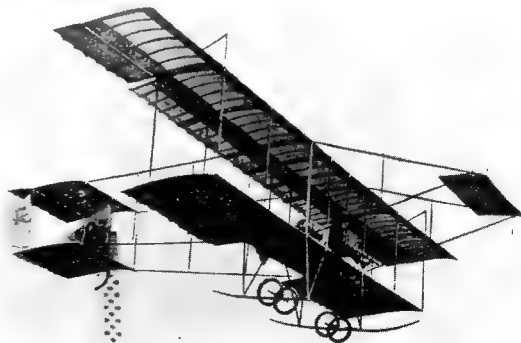
Henry Farman Bétheny 97.129 nm (180.000 km;
111.847 miles)

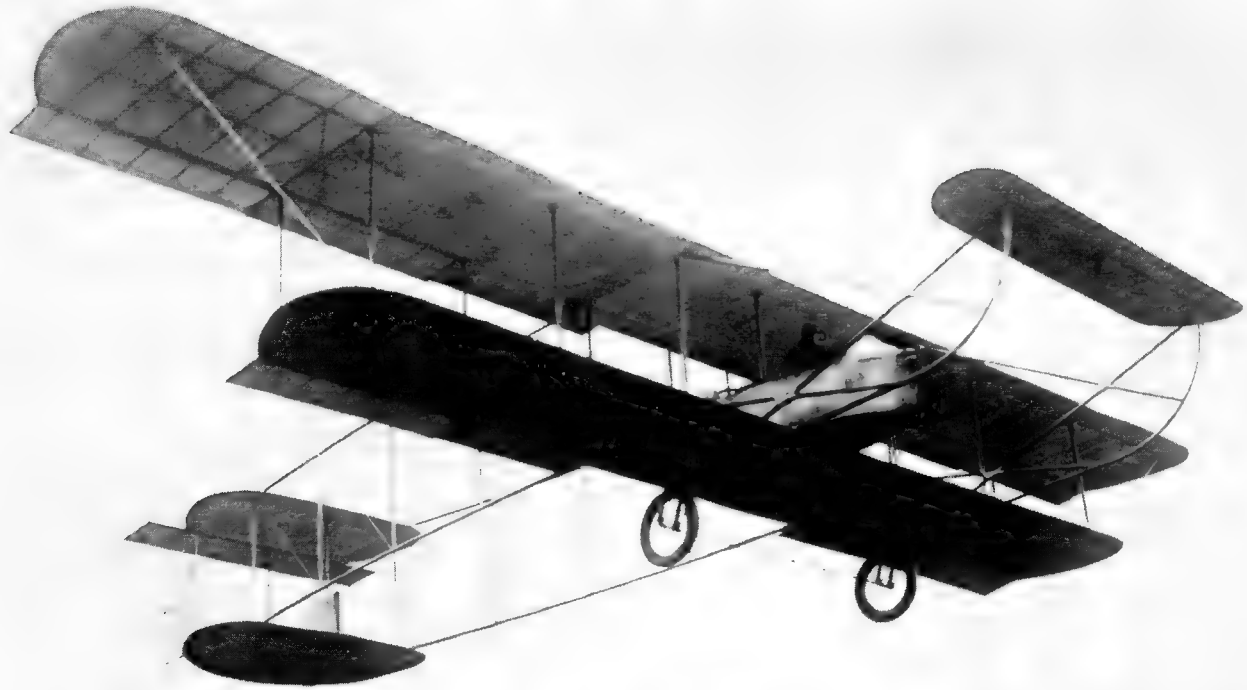
4 Nov 1909

Henry Farman Mourmelon 126.382 nm (234.212 km;
145.532 miles)

Opposite Henry Farman flying his Model III. Right A later Farman biplane, with upper wing extensions

In 1909 Gabriel Voisin sold secretly to J.T.C. Moore-Brabazon a biplane which had been ordered and paid for by Henry Farman and embodied improvements devised by Farman. From that moment, the two men parted company. Farman began building his own aeroplanes and the Model III became the progenitor of a succession of famous machines. First aeroplane in the world to have large and fully-effective ailerons, it flew initially with a 50 hp Vivinus engine. This was changed for a Gnome during the world's first international flying meet at Reims in August 1909, where it took the Grand Prix for distance, the Prix des Passagers for carrying three persons, and second place in the height competition.





(France)

MAURICE FARMAN

First flight 1910
Tandem two-seat biplane



Power plant: One Renault eight-cylinder Vee-type piston engine (60 hp)

Opposite. Fourny's Maurice Farman. The exposed cockpits of that period demanded warm wrappings for the pilots, as Fourny himself demonstrates above

Wing span: 11.00 m (36 ft 1 in)
Length: 12.75 m (41 ft 9 in)
Wing area: 50.00 m² (538.20 sq ft)
Weight empty: 420 kg (925 lb)
Speed: approx 43 knots (80 km/h; 50 mph)

Records for distance in a closed circuit:

28 Oct 1910

M. Tabuteau Etampes 251.47 nm (465.72 km; 289.38 miles)

30 Dec 1910

M. Tabuteau Buc 315.74 nm (584.75 km; 363.35 miles)

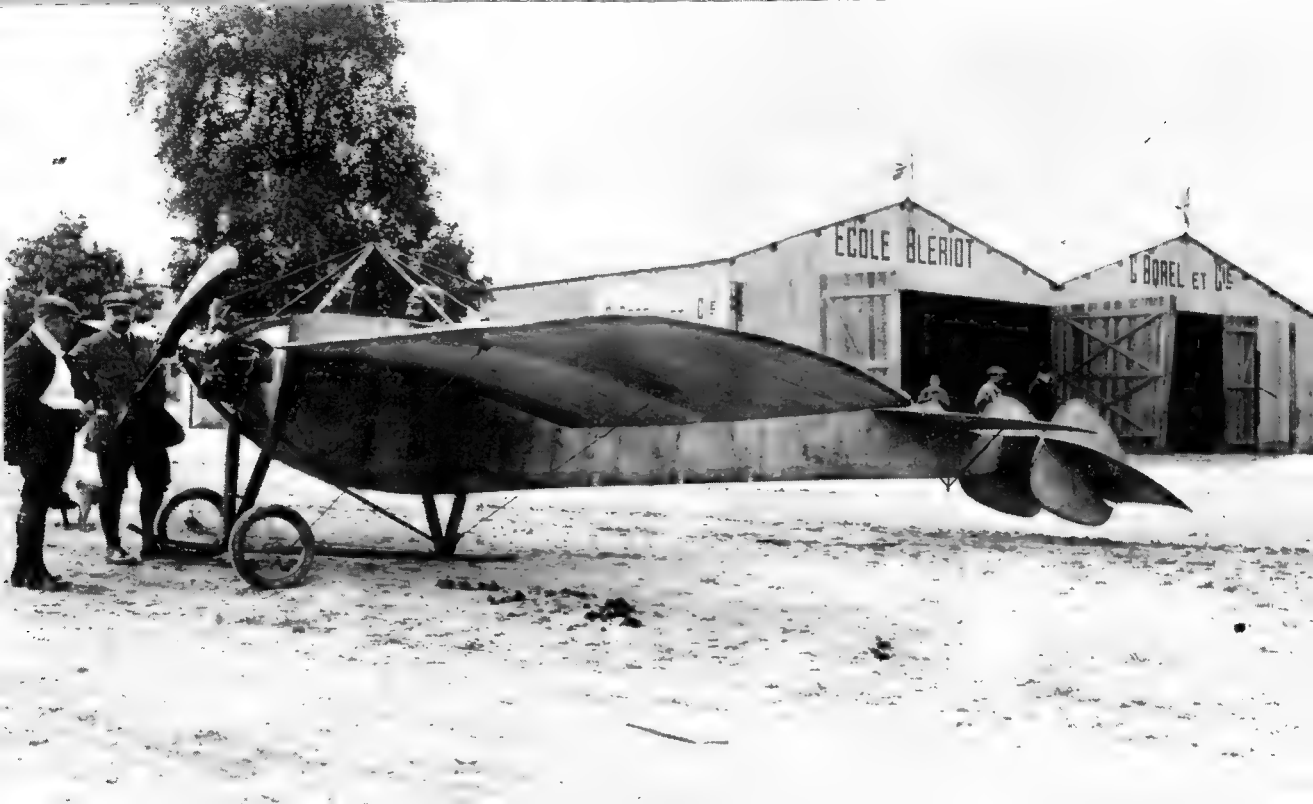
1 Sep 1911

M. Fourny Buc 390.36 nm (722.94 km; 449.21 miles)

11 Sep 1912

M. Fourny Etampes 545.84 nm (1,010.9 km; 628.14 miles)

At the beginning of 1909, Wilbur Wright had remained airborne much longer than any other pilot, but the reign of the *Flyer* was about to end. On 25 August, Louis Paulhan set a new distance record in a Voisin, during the Reims flying meet. Next day, Hubert Latham bettered the record in an Antoinette, only to lose it to Henry Farman on the 27th. Before the end of 1912, a succession of French-built aircraft raised the record nine more times, ending with a magnificent flight by Fourny, in a Maurice Farman, which represented an increase of over 800% in a little more than three years.



First flight 1911

Single-seat monoplane **Power plant:** One Nieuport flat-twin piston engine (28 hp)
Wing span: 8.65 m (28 ft 4½ in)
Length: 7.20 m (23 ft 7½ in)
Weight empty: 240 kg (529 lb)
Speed: 65 knots (120 km/h; 74.5 mph)

Records for speed:

11 May 1911

Edouard de Nieuport Châlons 64.623 knots
(119.760 km/h; 74.415 mph)

16 Jun 1911

Edouard de Nieuport Châlons 70.179 knots
(130.057 km/h; 80.814 mph)

21 Jun 1911

Edouard de Nieuport Châlons 71.841 knots
(133.136 km/h; 82.727 mph)

Record for height:

**28 Dec 1913

Georges Legagneux St Raphaël 6,120 m (20,079 ft)

Records for distance in a closed circuit:

*16 Jul 1911

Jan Olieslagers Kiewit (Belgium) 337.253 nm
(625.000 km; 388.356 miles)

*24 Dec 1911

A. Gobé Pau 399.469 nm (740.299 km; 460.000 miles)

*50 hp Gnome engine

**80 hp Le Rhône engine

Edouard de Nieuport (1875-1911) first demonstrated his ability as a designer/pilot at the second Reims meeting in July 1910, when he achieved 39 knots (72 km/h; 45 mph) in a monoplane powered by a Darracq engine of only 20 hp. Regarded by many as the best aeroplane at the meeting, it was followed by the Type IIN (above) and two-seat Type IVG. Soon, Nieuports were being flown by air forces, as well as by sporting pilots. They were used for early trials with a machine-gun fitted in an above-fuselage 'pulpit', firing above the propeller. On 27 August 1913, Lt Petr Nesterov of the Imperial Russian Army performed the first-ever loop, in a Nieuport, at Kiev.

Edouard de Nieuport with the original Type IIN. Design of Nieuport monoplanes underwent considerable refinement as more powerful engines became available



(France)

First flight 1912

Single-seat monoplane

Power plant: One Gnome fourteen-cylinder rotary piston engine (140 hp)

Wing span: 7.00 m (22 ft 11½ in)

Length: 7.00 m (22 ft 11½ in)

Height: 2.30 m (7 ft 6½ in)

Wing area: 11.60 m² (124.86 sq ft)

T-O weight: approx 400 kg (882 lb)

Speed: 86 knots (160 km/h; 99.5 mph)

Records for speed:

*13 Jan 1912

Jules Védrines Pau 78.330 knots (145.161 km/h;
90.199 mph)

22 Feb 1912

Jules Védrines Pau 87.033 knots (161.290 km/h;
100.221 mph)

29 Feb 1912

Jules Védrines Pau 87.661 knots (162.454 km/h;
100.944 mph)

1 Mar 1912

Jules Védrines Pau 90.017 knots (166.821 km/h;
103.658 mph)

Two struts in each cabane provide an easy recognition feature for the 1912 Deperdussin 'Monocoque'. The 1913 version (page 31) had three

DEPERDUSSIN 'MONOCOQUE' (1912)

2 Mar 1912

Jules Védrines Pau 90.605 knots (167.910 km/h;
104.334 mph)

13 Jul 1912

Jules Védrines Reims 92.152 knots (170.777 km/h;
106.116 mph)

9 Sep 1912

Jules Védrines Chicago 93.945 knots (174.100 km/h;
108.181 mph)

**100 hp Gnome*

The 1912 Deperdussin racer represented a halfway stage towards the spectacular, highly-streamlined 1913 model (page 31). A Swedish engineer named Ruchonnet had suggested that a hollow fuselage shell of moulded plywood might prove lighter in weight, stronger and better aerodynamically than a conventional braced girder structure. Deperdussin's famous chief designer, Louis Béchèreau, was impressed by the possibilities of this 'monocoque' form of construction, but unwilling to adopt it without proof of its soundness. Thus, the 1912 racer had a plywood shell over the usual type of lattice girder fuselage beam. Powered by a Gnome engine that comprised two standard 50 hp units on a common crankshaft, it set new French speed records over all distances from 5 to 150 km (3-93 miles). Re-engined with a 140 hp Gnome, it then raised the world speed record six times in seven months. Only its 1913 development proved faster in the years before the first World War.



First flight 1912

Single-seat monoplane

Data: Type H

Power plant: One Gnome seven-cylinder rotary piston engine (80 hp)

Wing span: 9.20 m (30 ft 2 in)

Length: 6.38 m (20 ft 11 in)

Wing area: 14.00 m² (150.69 sq ft)

Weight empty: 300 kg (660 lb)

T-O weight: 460 kg (1,015 lb)

Speed: 65 knots (120 km/h; 75 mph)

Records for height:

17 Sep 1912

Georges Legagneux Corbeaulieu 5,450 m (17,881 ft)

11 Dec 1912

Roland Garros Tunis 5,610 m (18,406 ft)

First of the succession of monoplanes built by the brothers Léon (1885–1918) and Robert-Charles Morane (1886–1968), in association with Raymond Saulnier, was the Type A of 1911. About twelve of the basic model, with 50 hp Gnome, were sold to the French Aviation Militaire; 80 hp export versions went to Russia and Romania. By 1912, the standard Moranes were the single-seat Type H and two-seat Type G, usually fitted with the 80 hp Gnome. A Type H with reduced span was used by famous British sporting pilot Gustav Hamel to win the 1913 Aerial Derby race, at 66 knots (122 km/h; 76 mph). Brindejonec des Moulinais made a 2,700 nm (5,000 km; 3,107 mile) tour of Europe in another. Roland Garros, who was to become the first successful fighter pilot in 1915, used a 60 hp Morane for the first crossing of the Mediterranean by aeroplane, on 23 September 1913. No stranger to North Africa, he had set his height record (above) in Tunis in the previous year.



(France)

First flight 1913

Single-seat monoplane

Power plant: One Gnome fourteen-cylinder two-row rotary piston engine (160 hp)

Wing span: 6.65 m (21 ft 10 in) (varied in different aircraft)

Length: 6.09 m (20 ft 0 in)

Wing area: 9.66 m² (104 sq ft)

T-O weight: 612 kg (1,350 lb)

Speed: 113 knots (209 km/h; 130 mph)



Prévost flew his Deperdussin without a windscreen at Reims, to reduce drag.
Photograph above was taken by a daring cameraman from the top of a pylon marking one of the turning points

DEPERDUSSIN 'MONOCOQUE' (1913)

Records for speed:

17 Jun 1913

Maurice Prévost Reims 97.032 knots (179.820 km/h; 111.735 mph)

27 Sep 1913

Maurice Prévost Reims 103.549 knots (191.897 km/h; 119.239 mph)

29 Sep 1913

Maurice Prévost Reims 109.998 knots (203.850 km/h; 126.666 mph)

Satisfied that the integrity of monocoque construction had been proved by the success of his 1912 racer, Béchereau progressed to a full monocoque fuselage, with no interior structure, for the 1913 model. The end product was one of the three fastest aeroplanes built before the first World War, rivalled only by the Royal Aircraft Factory's S.E.4 experimental military scout and the French Ponnier monoplane, developed from the Hanriot racer. In the Gordon Bennett Trophy contest at Reims, in September 1913, Maurice Prévost not only came first but raised the world speed record several times, finally setting the first over-200 km/h record. Second place was taken by the Ponnier, flown by Jules Védrines' brother Emile. Unfortunately the Deperdussin story ended that year, as Armand Deperdussin was arrested for embezzlement. His company was taken over by Louis Blériot and renamed successively Société Provisoire des Aéroplanes Deperdussin and Société Pour l'Aviation et ses Dérivés—the initial letters of which were borne by the famous Spad fighters of the first World War.



First flight 1920

Single-seat biplane

Power plant: One Hispano-Suiza 8 Fb eight-cylinder Vee-type piston engine (300/320 hp)

Wing span: upper, 5.46 m (17 ft 11 in); lower, 6.00 m (19 ft 8 1/4 in)

Length overall: 6.20 m (20 ft 4 in)

Height: 2.50 m (8 ft 2 3/8 in)

Wing area: 12.30 m² (132.40 sq ft)

Weight empty: 690 kg (1,521 lb)

T-O weight: 936 kg (2,063 lb)

Records for speed:

7 Feb 1920

Sadi-Joseph Lecointe Villacoublay 148.534 knots
(275.264 km/h; 171.041 mph)

10 Oct 1920

Sadi-Joseph Lecointe Buc 160.098 knots
(296.694 km/h; 184.357 mph)

20 Oct 1920

Sadi-Joseph Lecointe Villacoublay 163.246 knots
(302.529 km/h; 187.982 mph)

12 Dec 1920

Sadi-Joseph Lecointe Villacoublay 168.920 knots
(313.043 km/h; 194.516 mph)

Sadi Lecointe's Nieuport 29V, October 1920

Records for height:

5 Sep 1923

Sadi-Joseph Lecointe Villacoublay 10,742 m
(35,243 ft)

30 Oct 1923

Sadi-Joseph Lecointe Issy-les-Moulineaux 11,145 m
(36,565 ft)

No new records were accepted during the period of the first World War. On 6 January 1920, the Fédération Aéronautique Internationale announced that it was ready to consider new claims, but that future absolute speed records would represent the average speed achieved in four runs over a 1-km course, to cancel out the effect of wind speed. All but one pre-war speed record (by Curtiss) had been set by Frenchmen or pilots domiciled in France, and the first nine post-war records also went to France. The Nieuport 29V ('Vitesse') used by Sadi Lecointe was a modification of the Nieuport 29 fighter, which saw worldwide service. In it, in 1920, he won the Prix Deutsch, Grand Prix de Monaco and Gordon Bennett Aviation Cup, as well as raising the speed record four times—including the first over-300 km/h record. He was awarded the Gold Medal of the Aéro-Club de France. For the final attempt, the aircraft's cockpit was faired over; Lecointe sat inside the fuselage and looked out of a small 'fisheye' window on each side. The 1923 height records were set by the Nieuport 40, an aircraft very like the 29V but with the wing span increased to 14.00 m (45 ft 11 in).



(USA)

PACKARD-LEPÈRE LUSAC-11

First flight 15 May 1918

Two-seat biplane

Power plant: One Liberty 12 twelve cylinder Vee-type turbocharged piston engine (400/425 hp)

Wing span: 12.67 m (41 ft 7 in)

Length: 7.70 m (25 ft 3 in)

Height: 3.23 m (10 ft 7 in)



Photograph above shows Capt Schroeder's LePère over McCook Field, Ohio

Wing area: 38.61 m² (415.60 sq ft)

Weight empty: 1,162 kg (2,561 lb)

T-O weight: 1,699 kg (3,746 lb)

Max level speed: 118 knots (219 km/h; 136 mph) at S/L

Time to 1,981 m (6,500 ft): 6 min

Service ceiling: 6,157 m (20,200 ft)

Range: 278 nm (515 km; 320 miles)

Records for height:

27 Feb 1920

Capt Rudolph W. Schroeder Dayton 10,093 m

(33,113 ft)

18 Sep 1921

1st Lt John A. Macready Dayton 10,518 m (34,508 ft)

A new dimension was given to high-altitude flying by development of the turbo-supercharger by Dr Sanford A. Moss of the US General Electric Company. Early high-altitude testing was performed by 'Shorty' Schroeder, who had been chief test pilot of the US Army Air Service since 1918. His 1920 record attempt was almost his final flight. With his oxygen supply exhausted, eyes blinded by frostbite, the LePère's fuel tanks crushed, and numb with cold despite a fur-lined, electrically heated flying suit, he fell unconscious for six miles before recovering just in time to land the aircraft. Testing was taken over later by Lt Macready who, despite his altitude record, is best remembered as co-pilot with Lt Oakley G. Kelly on the first non-stop coast-to-coast flight across the USA, in a Fokker T-2, on 2-3 May 1923.



(France)

SPAD-HERBEMONT 20 bis

First flight (20 bis 6) 7 October 1920

Single-seat biplane

Data apply to de Romanet's 20 bis 6

Power plant: One Hispano-Suiza 8 Eb eight-cylinder Vee-type piston engine (320 hp)

Wing span: 6.48 m (21 ft 3 in)

Length: 7.50 m (24 ft 7¼ in)

Height: 2.50 m (8 ft 2½ in)

Wing area: 15.20 m² (163.61 sq ft); later reduced to 14.00 m² (150.69 sq ft)

Weight empty: 890 kg (1,962 lb)

T-O weight: 1,050 kg (2,315 lb)

Records for speed:

28 Feb 1920

Jean H. Casale Villacoublay 152.959 knots
(283.464 km/h; 176.136 mph)

9 Oct 1920

Comte Bernard de Romanet Buc 157.933 knots
(292.682 km/h; 181.864 mph)

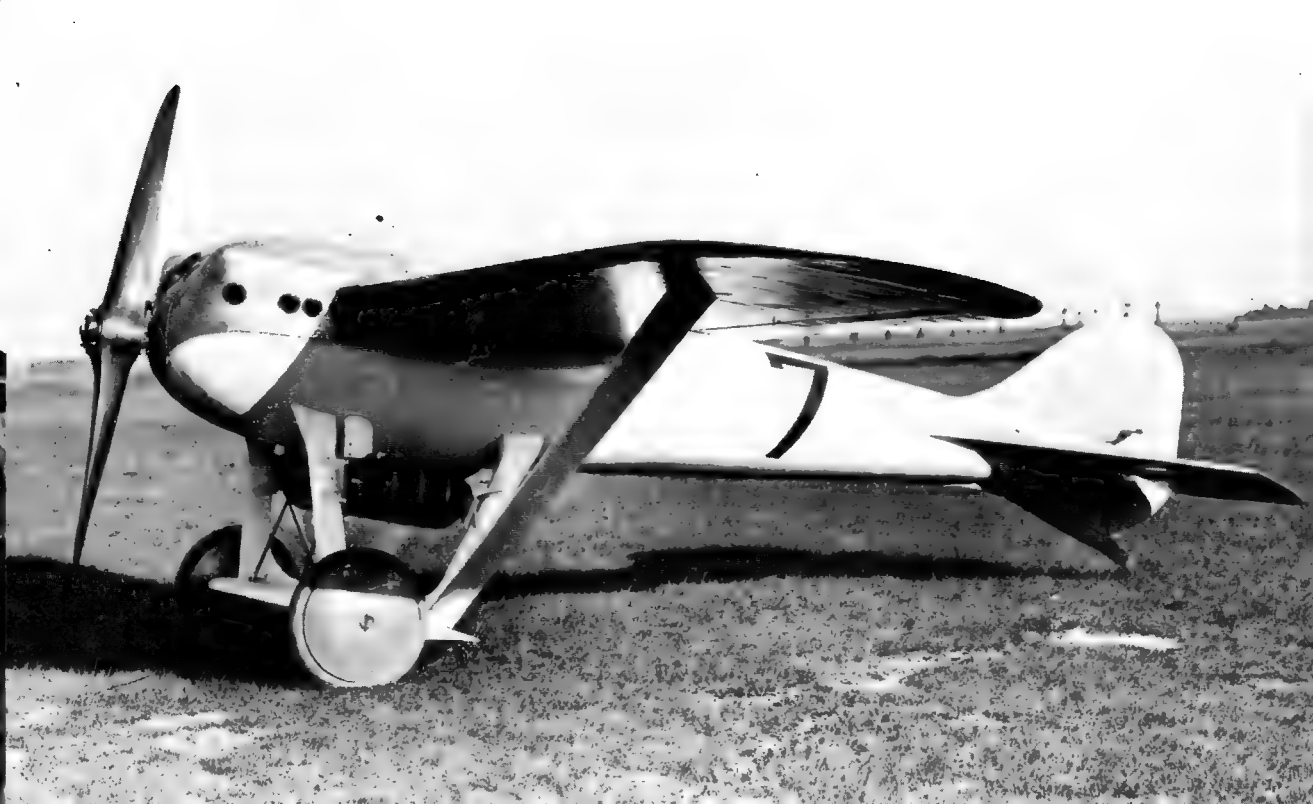
4 Nov 1920

Comte Bernard de Romanet Buc 166.744 knots
(309.012 km/h; 192.011 mph)

One of the great French designers of the 'twenties and 'thirties, André Herbemont had joined Deperdussin in 1912 as chief carpenter. He became technical director of Spad when Bêchéreau left the company in 1919, and the Spad-Herbemont 20 bis was but one of a succession of types evolved from his S.20 two-seat monocoque fighter. His two star pilots, Casale and de Romanet, were soon engaged in a hectic contest with Sadi Lecointe of the Nieuport company, for the prize of holding the absolute speed record. Three times they raised the record, but Lecointe finally put it beyond their reach in December 1920.



Opposite. Jean Casale's Spad-Herbemont 20 bis in early 1920. Right: Modified S 20 bis flown by de Romanet in the Autumn of 1920



(France)

NIEUPORT-DELAGE SESQUIPLANE

First flight 1921

Single-seat racing sesquiplane

Power plant: One Hispano-Suiza 8 Fb eight-cylinder Vee-type piston engine (300 hp)

Wing span: upper, 8.00 m (26 ft 3 in);
lower, 1.50 m (4 ft 11 in)

Length overall: 6.10 m (20 ft 0 in)

Height: 2.02 m (6 ft 7½ in) to top of fuselage in flying position

Wing area: 11.00 m² (118.40 sq ft)

Weight empty: 769 kg (1,695 lb)

T-O weight: 1,014 kg (2,235 lb)

Records for speed:

26 Sep 1921

Sadi-Joseph Lecointe Villesauvage 178.218 knots
(330.275 km/h; 205.223 mph)

21 Sep 1922

Sadi-Joseph Lecointe Villesauvage 184.018 knots
(341.023 km/h; 211.901 mph)

15 Feb 1923

Sadi-Joseph Lecointe Istres 202.352 knots
(375.000 km/h; 233.014 mph)

Realising that the Nieuport 29V had reached the limit of its performance in terms of speed, the company's chief engineer, Gustave Delage, designed a beautiful little racer which was known as the Nieuport-Delage Sesquiplane although its lower wing was little more than an aerofoil axle fairing. The fuselage was a tulip-wood monocoque reminiscent of that of the 1913 Deperdussin. Two examples were built. In one of them, on 26 September 1921, Sadi Lecointe achieved his ambition of setting the first over-200 mph speed record. The second Sesquiplane was flown to victory in the 1921 Coupe Deutsch by Georges Kirsch, raising the 200-km closed-circuit speed record in the process, after a crash (probably due to the then little-understood phenomenon of flutter) had eliminated Lecointe. After Kirsch's aircraft had been modified, Lecointe raised his own record in it. 'Billy' Mitchell then entered the scene with the American Curtiss biplane racer, beginning a period of Franco-US competition in which Nieuport had to admit defeat after one more brief moment of glory in 1923.

The Nieuport-Delage Sesquiplane in which Georges Kirsch won the 1921 Coupe Deutsch and set a new closed-circuit speed record



First flight 2 October 1922

Single-seat biplane

Power plant: One Curtiss D-12 twelve-cylinder Vee-type piston engine (375 hp)

Wing span: 5.79 m (19 ft 0 in)

Length overall: 5.75 m (18 ft 10½ in)

Height: 2.31 m (7 ft 7 in)

Wing area: 12.63 m² (135.91 sq ft)

Weight empty: 732.8 kg (1,615.5 lb)

T-O weight: 962 kg (2,121 lb)

Max level speed: 208 knots (386 km/h; 240 mph)

Records for speed:

18 Oct 1922

Gen William G. Mitchell Detroit (Selfridge Field) 193.630 knots (358.836 km/h; 222.970 mph)
29 Mar 1923

1st Lt Russell L. Maughan Dayton (Wright Field) 205.455 knots (380.751 km/h; 236.587 mph)

Second only to the Schneider Trophy contests in prestige were America's Pulitzer Trophy races of 1920-25. Intended in part to encourage US Army and Navy sponsorship of air racing, to speed technological progress, the Pulitzer competitions were dominated by Curtiss racing biplanes throughout their brief life. The 1921 race was won by Bert Acosta in the privately-entered CR-1 Navy Racer, at a speed which bettered unofficially the closed-circuit record. First and second in 1922 were the two Army R-6s (left). Four days later, and only sixteen days after the aircraft's first flight, General 'Billy' Mitchell, the fiery advocate of air power, set a world speed record in the R-6 in which Lt Maughan had won the Trophy. Incensed by press criticism that he had 'pulled rank' by not letting Maughan make the attempt (which was quite untrue), Mitchell at once began preparations for a record attempt by the young lieutenant. Thus, in March 1923, the R-6 regained the absolute record which had meanwhile been held briefly by Sadi Lecoq for France.

First Lt Lester J. Maitland with the Curtiss R 6 in which he finished second to Russell Maughan, in another R-6, in the 1922 race for the Pulitzer Aviation Trophy. After some modification, Maughan's aircraft set a new world speed record in March 1923



First flight 9 September 1923

Single-seat biplane

Power plant: One Curtiss D-12A twelve-cylinder Vee-type piston engine (488 hp)

Wing span: upper, 6.71 m (22 ft 0 in); lower, 5.87 m (19 ft 3 in)

Length: 8.64 m (28 ft 4¹/₄ in)

Height: 3.54 m (11 ft 7³/₁₆ in)

Wing area: 24.71 m² (266.00 sq ft)

Weight empty: 767.5 kg (1,692 lb)

T-O weight: 958 kg (2,112 lb)

Time to 6,370 m (20,900 ft): 10 min

Service ceiling: 9,700 m (31,800 ft)

Records for speed:

2 Nov 1923

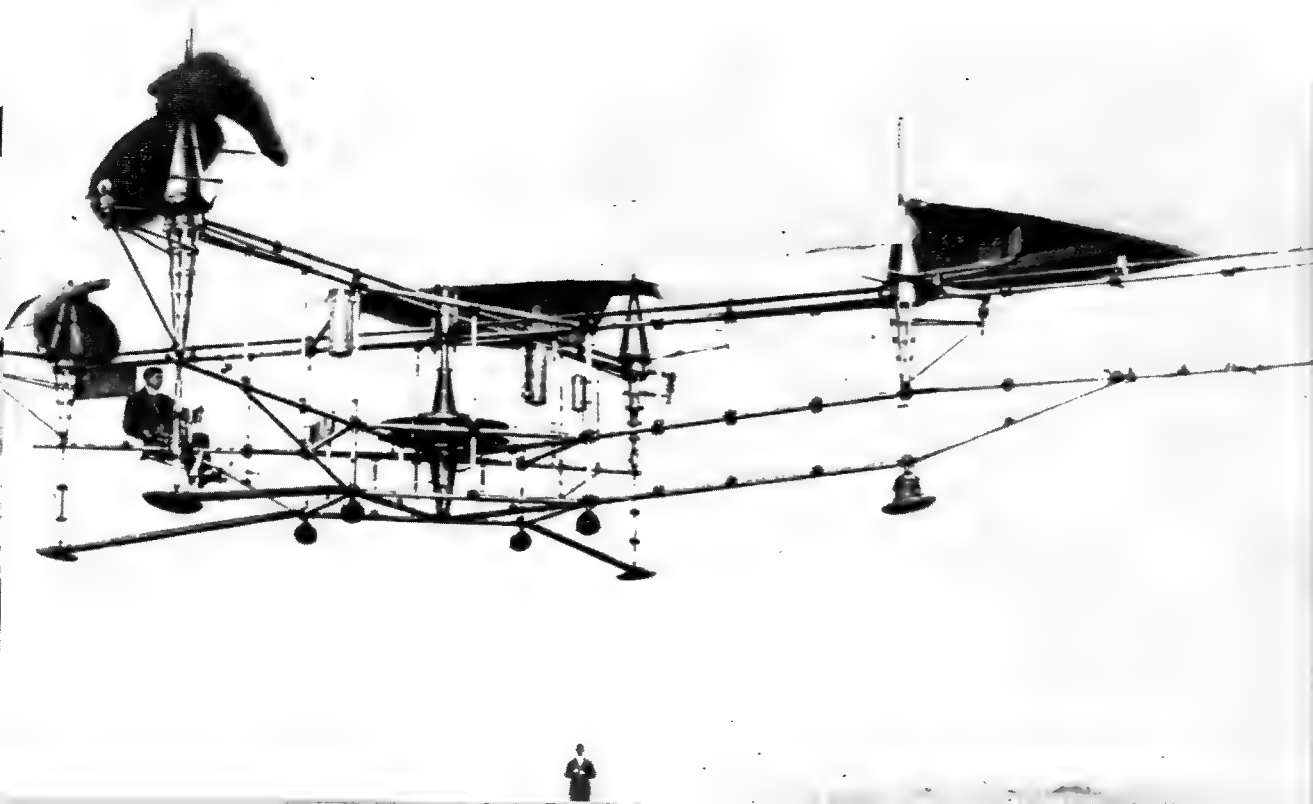
Lt Harold J. Brow Mineola (NY) 225.047 knots
(417.059 km/h; 259.148 mph)

4 Nov 1923

Lt Alford J. Williams Mineola (NY) 231.504 knots
(429.025 km/h; 266.583 mph)

When the Navy's CR-1 and CR-2 Curtiss racers were beaten into third and fourth places by Army R-6s in the 1922 Pulitzer race, intensive effort was devoted to restoring lost prestige. The CR-1 and CR-2 were modified and put on floats, as CR-3s, in which form they came first and second in the 1923 Schneider Trophy contest. One CR-3 was then fitted with a more powerful engine as the CR-4, for a successful attempt on the closed-circuit speed record for seaplanes. At the same time, two new Navy racers were ordered from Curtiss, as R2C-1s. Like their predecessors, they were powered by Curtiss D-12 engines in close cowlings that set new standards of streamlining, but the upper wing now rested on top of the fuselage and I-type interplane struts were fitted. Lts Williams and Brow finished first and second in the R2C-1s in the 1923 Pulitzer race. A month later, both made successful attempts on the absolute speed record.

Lt Alford Williams with the R2C-1 in which he won the 1923 Pulitzer race and then set a new world speed record



First flight 11 November 1922

Single-seat multi-rotor helicopter

Power plant: One Le Rhône 9J nine-cylinder rotary piston engine (120 hp) originally; later fitted with 180 hp Gnome rotary

Diameter of lateral pair of rotors: each 7.60 m (24 ft 11¼ in)

Diameter of longitudinal pair of rotors: each 6.40 m (21 ft 0 in)

Disc area of lateral pair of rotors: 12.88 m² (138.64 sq ft)

Disc area of longitudinal pair of rotors: 15.295 m² (164.63 sq ft)

Disc area (total): 28.175 m² (303.27 sq ft)

Weight empty: 930 kg (2,050 lb)

T-O weight: 1,040 kg (2,293 lb)

Records for helicopters:

14 Apr 1924

Étienne Oehmichen Distance in straight line 360 m (1,181 ft)

17 Apr 1924

Étienne Oehmichen Distance in straight line 525 m (1,722 ft)

4 May 1924

Étienne Oehmichen Time over 1 km closed circuit 7 min 40 sec

Little success in helicopter development had been achieved by 1922. As long ago as 1907, the Breguet brothers had succeeded in getting a huge multi-rotor contraption to lift itself off the ground while it was steadied with long poles. Another Frenchman named Paul Cornu had achieved a true free flight in his tandem-rotor design in the same year, before running out of money. A young man named Igor Sikorsky had turned to fixed-wing aircraft after his two helicopters had failed to become airborne in Russia in 1910. Experiments by pioneers like Étienne Oehmichen (above) kept interest alive. In Spain, Juan de la Cierva was to achieve the first major breakthrough one year later, by discovering the principle of autorotation and perfecting the flapping hinge, which made his Autogiro a practical aircraft. Successful helicopters were still twelve years away in the future when Oehmichen set his records.

Despite its records, the Oehmichen No. 2 was far from being a practical helicopter, as this photograph shows



{France}

First flight 2 October 1924

Single-seat monoplane

Power plant: One Hispano-Suiza Model 50 twelve-cylinder W-type piston engine (450/600 hp)

Wing span: 9.10 m (29 ft 10¹/₄ in)

Length: 6.70 m (21 ft 11³/₄ in)

Height: 2.30 m (7 ft 6¹/₂ in)

Wing area: 10.80 m² (116.25 sq ft)

Weight empty: 965 kg (2,127 lb)

T-O weight: 1,189 kg (2,621 lb)

Record for speed:

11 Dec 1924

Adjudant Florentin Bonnet Istres 241.835 knots
(448.171 km/h; 278.480 mph)

SIMB (BERNARD-HUBERT) V.2

Note: This aircraft is also sometimes called the 'Ferbois' V.2, after the trading name (from *fer*: iron; *bois*: wood) used by SIMB (Société Industrielle des Metaux et du Bois)

Stung by America's increasing dominance in aviation record-breaking, the French Under-Secretary of State for Air, M Laurent-Eynac, offered large cash awards to French aircraft and aero-engine makers who regained the world absolute speed and height records. Sadi Lecointe brought the height record back to Europe in the Nieuport 40. A small company known as SIMB determined to win the award for speed. It built two all-wooden cantilever monoplanes which, except for their non-retractable landing gear, were superbly streamlined by any standards. The V.1 crashed as a result of inadequate tail area. The V.2 set a record that was to stand for three years, and remain unbeaten by a landplane for eight years. It was, sadly, the last time that France was to set an absolute speed record.

Florentin Bonnet's Bernard-Hubert V.2 which held the absolute speed record for three years in the 'twenties. In only five years since the end of the First World War, the record speed had more than doubled.



First flight May 1922

Two-seat biplane

Data: Arrachart/Lemaître aircraft

Power plant: One Renault eight-cylinder Vee-type piston engine (480/550 hp)

Wing span: 14.83 m (48 ft 7¾ in)

Length: 9.50 m (31 ft 2 in)

Height: 3.34 m (10 ft 11½ in)

Wing area: 50.00 m² (538.195 sq ft)

T-O weight: 3,400 kg (7,496 lb)

Max level speed: 121 knots (225 km/h; 140 mph) at S/L

Service ceiling: 6,700 m (21,975 ft)

Records for distance in a straight line:

3-4 Feb 1925

Capt Ludovic Arrachart and Capt Henri

Lemaître Étampes-Villa Cisneros 1,708 nm (3,166 km; 1,967 miles)

*14-15 Jul 1926

Capt Lucien Girier and Lt Dordilly Le Bourget-Omsk 2,544.7 nm (4,715.9 km; 2,930.3 miles)

**31 Aug-1 Sep 1926

Lt Challe and Capt Weiser Le Bourget-Bandar Abbas 2,792 nm (5,174 km; 3,215 miles)

*28-29 Oct 1926

Capt Dieudonné Costes and Capt Jean Rignot Le Bourget-Jask 2,912 nm (5,396 km; 3,353 miles)

***27-29 Sep 1929

Capt Dieudonné Costes and Maurice Bellonte Le Bourget-Moulart 4,266 nm (7,905 km; 4,912 miles)

Record for distance in a closed circuit:

15-17 Dec 1929

Capt Dieudonné Costes and Paul

Codos Istres 4,332 nm (8,029 km; 4,989 miles)

*500 hp Hispano-Suiza

**500 hp Farman

***600 hp Hispano-Suiza

One of the most successful military aircraft of the inter-war years, this two-seat reconnaissance-bomber was built in several versions, with many different power plants, and remained in service for more than 15 years. At least a dozen air forces flew Breguet XIXs, which were built in France, Belgium, Greece, Japan, Spain and Yugoslavia. Many great flights culminated in the first successful east-west crossing of the North Atlantic from Paris to New York, in 37 hr 18 min on 1-2 September 1930, by Costes and Bellonte in the Breguet XIX *Point d'Interrogation* (Question Mark).

Point d'Interrogation, the famous Breguet XIX of Costes and Bellonte, which can still be seen in the Musée de l'Air in Paris. Because of its much increased fuel capacity, it was known as a XIXGR (*grand raid*) Super Bidon (petrol tank)



WRIGHT
APACHE

U.S. NAVY

A-7223

F-3-W
WRIGHT

(USA)

First flight 1926

Single-seat biplane

Power plant: One Pratt & Whitney R-1340B Wasp nine-cylinder radial piston engine (425 hp)

Wing span: 8.33 m (27 ft 4 in)

Length: 6.73 m (22 ft 1 in)

Height: 2.59 m (8 ft 6 in)

Wing area: 19.97 m² (215.00 sq ft)

Weight empty: 641 kg (1,414 lb)

T-O weight: 965 kg (2,128 lb)

Max level speed: 141 knots (261 km/h; 162 mph) at S/L

Seaplane records for height:

5 May 1927

Lt C. C. Champion Hampton Roads 10,197 m (33,455 ft)

4 Jul 1927

Lt C. C. Champion Anacostia 11,581 m (37,995 ft)

4 Jun 1929

Lt Apollo Soucek Anacostia 11,753 m (38,560 ft)

WRIGHT F3W-1 APACHE

Records for height:

25 Jul 1927

Lt C. C. Champion Anacostia 11,710 m (38,419 ft)

8 May 1929

Lt Apollo Soucek Anacostia 11,930 m (39,140 ft)

*4 Jun 1930

Lt Apollo Soucek Anacostia 13,157 m (43,166 ft)

*450 hp Wasp

The Apache was designed as a single-seat shipboard fighter, powered by a new 325/350 hp engine named the Wright Simoon. As the airframe was ready before the engine, it flew initially with a 200 hp Wright Whirlwind. Speed and climb proved so outstanding, due in part to the aircraft's small size and weight, that the Navy decided to use the Apache as a testbed for the Wasp engine that had been intended as a competitor for the Simoon. During subsequent trials, it first exceeded by nearly 3,000 ft the previous seaplane height record set by a French 515 hp Loire-Gourdou-Leseurre, achieving an average rate of climb of 425 m (1,400 ft)/min. Five other height records followed, as above.

The Wright Aeronautical Company, which built the Apache, was primarily an engine manufacturer. By a strange twist of fate, the aircraft achieved its greatest successes while fitted with an engine made by Wright's most formidable competitor, Pratt & Whitney



(USA)

RYAN NYP 'SPIRIT OF ST LOUIS'



Above: Inside a hangar at Le Bourget Airport, Paris, at the end of its historic transatlantic flight, the *Spirit of St Louis* bore scars left by souvenir hunters who cut pieces of fabric off the fuselage

First flight 28 April 1927

Single-seat cabin monoplane

Power plant: One Wright Whirlwind J-5C nine-cylinder radial piston engine (237 hp)

Wing span: 14.02 m (46 ft 0 in)

Length: 8.43 m (27 ft 8 in)

Height: 2.30 m (9 ft 10 in)

Wing area: 29.64 m² (319.00 sq ft)

Weight empty: 975 kg (2,150 lb)

T-O weight: 2,381 kg (5,250 lb)

Max level speed: 103.8 knots (192.3 km/h; 119.5 mph)

Max range: 3,656 nm (6,775 km; 4,210 miles)

Record for distance in a straight line:

20-21 May 1927

Charles A. Lindbergh New York (Roosevelt Field)-Le Bourget 3,135 nm (5,809 km; 3,610 miles)

The flight that set this record was one of the most celebrated in aviation history. Raymond Orteig had offered a prize of \$25,000 to the first airman who linked New York with France non-stop in a heavier-than-air landplane or seaplane. Lindbergh's aeroplane was built by Ryan within two months, at a cost of only \$6,000 (plus engine and equipment). It was single-engined because a heavily-loaded multi-engined aeroplane was unable to fly if one engine failed and was therefore no safer. He preferred extra fuel to a navigator and radio, and used a periscope to see forward instead of fitting a drag-inducing windscreen. The flight took 33 hr 39 min.



(USA)

First flight September 1926

Two-seat cabin monoplane

Power plant: One Wright Whirlwind J-5C nine-cylinder radial engine (237 hp)

Wing span: 14.12 m (46 ft 4 in)

Length: 8.46 m (27 ft 9 in)

Height: 2.58 m (8 ft 5½ in)

Wing area: 25.36 m² (273.00 sq ft)

Weight empty: 861 kg (1,898.5 lb)

T-O weight: 2,457.5 kg (5,418 lb)

Max level speed: 113 knots (209 km/h; 130 mph)

Max range: 3,908 nm (7,242 km; 4,500 miles)

Time to 1,525 m (5,000 ft): 7 min 30 sec

Record for distance in a straight line:

4-6 June 1927

Clarence D. Chamberlin and Charles A. Levine New York (Roosevelt Field)-Eisleben 3,396 nm (6,294 km; 3,911 miles)

Clarence Chamberlin's transatlantic flight could well have become more famous than Lindbergh's, had the latter observed all the rules laid down by Raymond Orteig. One rule stated that two months had to elapse between

Right: After his successful eastbound transatlantic flight, Charles Levine teamed up with Capt W.G.R. Hinchcliffe to attempt a return flight to the USA. *Columbia* was clearly unfit for such a venture; so they set out instead to beat the UK-India record, only to be forced down at Vienna by engine trouble

WRIGHT-BELLANCA W.B.2 'COLUMBIA'

acceptance of an entry and take-off. Lindbergh's entry had been accepted on 27 March 1927, and he took off on 20 May, making himself theoretically ineligible for the prize. But he knew that if he waited, Chamberlin might have left first. In the event, everyone considered Lindbergh thoroughly worthy of the \$25,000; and Chamberlin and Levine had to be content with beating his distance record by flying non-stop from New York to Eisleben in Germany. A navigation error had caused them to miss Berlin, their intended destination.





UNIVERS

D-2239

Junkers
W 34

(Germany)

JUNKERS W 33 and W 34

First flights 1926

Single-engined cabin monoplanes

Data: W 34

Power plant: One (Gnome-Rhône built) Bristol Jupiter VI nine-cylinder radial piston engine (420 hp)

Wing span: 17.75 m (58 ft 2 $\frac{3}{4}$ in)

Length: 10.27 m (33 ft 8 $\frac{3}{8}$ in)

Height: 3.53 m (11 ft 7 in)

Wing area: 43.00 m² (462.85 sq ft)



Opposite A typical W 34 Above The W 33 *Bremen*, in Henry Ford's Edison Institute Museum at Dearborn, near Detroit

Weight empty: 1,500 kg (3,307 lb)

T-O weight: 2,700 kg (5,952 lb)

Cruising speed: 94 knots (175 km/h; 109 mph)

Service ceiling: 6,300 m (20,675 ft)

Range: 459 nm (850 km; 528 miles)

Record for distance in a closed circuit (W 33):

3-5 Aug 1927

Edzard and Ristics Dessau 2,514.898 nm

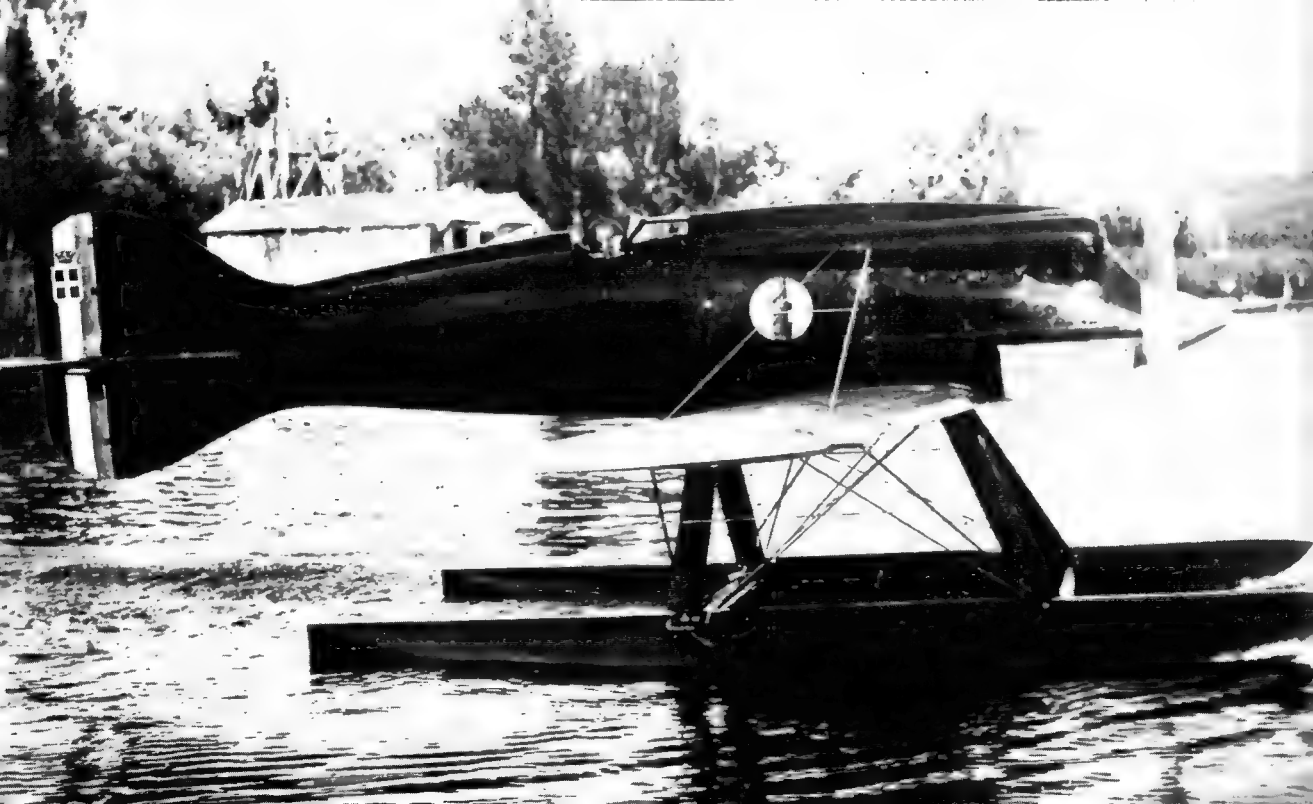
(4,660.628 km; 2,895.974 miles)

Record for height (W 34):

26 May 1929

Willi Neuenhofen Dessau 12,739 m (41,795 ft)

It might be said that records set by the W 33 and W 34 were particularly noteworthy in that these were basically standard passenger-carrying aircraft, but 'standard' is not a word to apply to these six-seat metal workhorses. The 199 W 33s were produced in nearly 30 versions; and there were more than 70 varieties of W 34 although no more than 100 aircraft were built. The two types differed basically in engine configuration, the W 33 having a watercooled in-line engine and the W 34 an aircooled radial. They set many records. A W 33 named *Bremen* also made the first successful east-west crossing of the North Atlantic, from Baldonnell, near Dublin, to Greenly Island off Labrador on 12-13 April 1928, crewed by Captain Hermann Koehl, Baron Gunther von Huenefeld, and Cdt James C. Fitzmaurice of the Irish Free State Army Air Corps.



(Italy)

MACCHI M.52 and M.52 bis

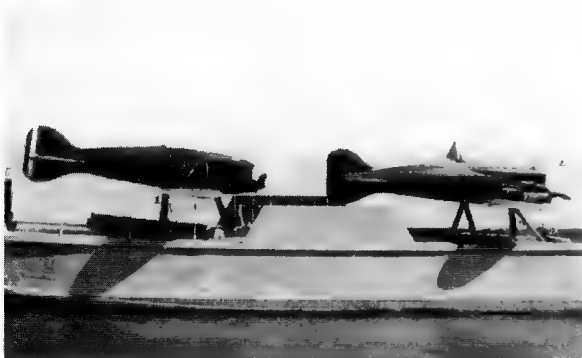
First flight 1927

Single-seat twin-float monoplanes

Power plant: One Fiat AS.3 twelve-cylinder Vee type piston engine (1,000 hp)

Wing span: M.52, 8.98 m (29 ft 5½ in); M.52 bis, 7.85 m (25 ft 9 in)

Length: 7.12 m (23 ft 4¼ in)



Above: Two of the three M.52s which represented Italy at the 1927 Schneider Trophy contest. None was able to complete the seven-lap course at Venice. Opposite: Although regarded as the 'poor relation' of Italy's 1929 team, Dal Molin's M 52 bis finished second to the British Supermarine S.6. Both of the new Macchi M.67s retired

Height: approx 2.80 m (9 ft 2¼ in)

Wing area: M.52, 13.30 m² (143.16 sq ft); M.52 bis, 10.20 m² (109.79 sq ft)

Weight empty: M.52, 1,190 kg (2,623 lb); M.52 bis, 1,170 kg (2,579 lb)

T-O weight: M.52, 1,515 kg (3,340 lb); M.52 bis, 1,480 kg (3,263 lb)

Records for speed:

M.52: 4 Nov 1927

Maggiore Mario de Bernardi Venice 258.627 knots (479.290 km/h; 297.816 mph)

M.52 bis: 30 Mar 1928

Maggiore Mario de Bernardi Venice 276.696 knots (512.776 km/h; 318.624 mph)

There were, altogether, twelve contests for the Schneider Trophy, of which the 1919 event was annulled after competitors became lost in a sudden fog. France won only the first contest; three were won by Italy, two by the USA and five by Britain, which retained the Trophy after successive wins in 1927, 1929 and 1931. Aircraft designed to compete in the Schneider contests held the absolute speed record continuously from 1927 to 1939, after which the record was never again set by a seaplane. Before setting the records listed above, Mario de Bernardi had won the 1926 contest in an 800 hp Macchi M.39, and had set a seaplane speed record of 224.954 knots (416.616 km/h; 258.873 mph) in the same aircraft on 17 November 1926.



(Italy)

SAVOIA-MARCHETTI S.64

First flight 3 April 1928

Three-seat monoplane

Power plant: One Fiat A.22T twelve-cylinder Vee-type piston engine (500 hp)

Wing span: 27.32 m (89 ft 7½ in)

Length: 15.50 m (50 ft 10¼ in)

Height: 3.90 m (12 ft 9½ in)

Wing area: 60.00 m² (645.83 sq ft)

Weight empty: 2,400 kg (5,291 lb)

T-O weight: 7,000 kg (15,432 lb)



Above. A special runway was built at Montecelio to enable the heavily loaded S 64 to become airborne at the start of its long-distance flights

Max level speed: 127 knots (235 km/h; 146 mph)

Range: 2,698 nm (5,000 km; 3,107 miles)

Record for distance in a straight line:

3-5 Jul 1928

Capt Arturo Ferrarin and Maggiore Carlo Del Prete Montecelio-Touros (Brazil) 3,878.821 nm (7,188.260 km; 4,466.569 miles)

Records for distance in a closed circuit:

31 May-2 Jun 1928

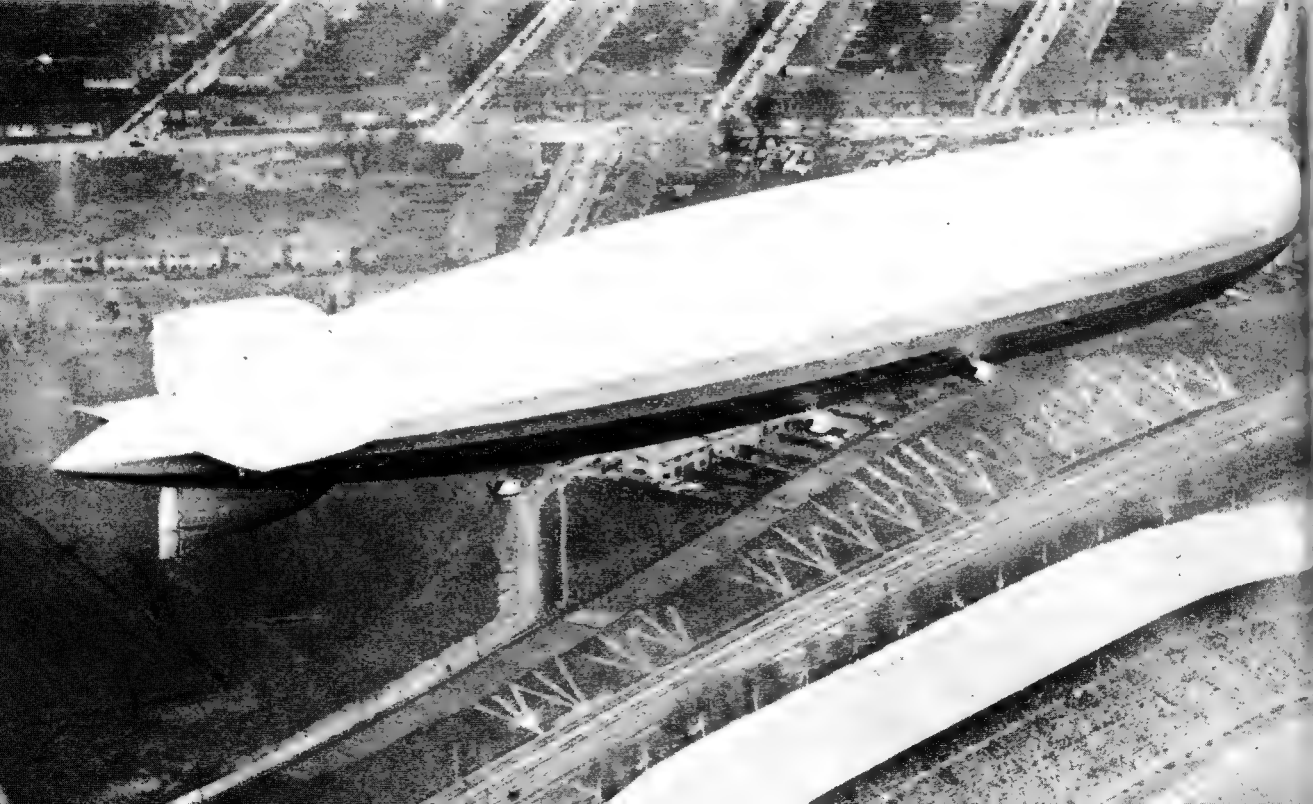
Capt Arturo Ferrarin and Maggiore Carlo Del Prete Montecelio 4,136.944 nm (7,666.616 km; 4,763.805 miles)

*30 May-2 Jun 1930

Ten Col Umberto Maddalena and Fausto Cecconi Montecelio 4,418.717 nm (8,188.800 km; 5,088.275 miles)

**in S.64 bis*

This unique aircraft was developed expressly for attempts on the world distance and duration records. A very large wing, single engine and clean lines contributed towards its ability to take off with 6,500 litres (1,430 Imp gallons) of fuel and then cover exceptional distances in its record flights. Its first record raised the distance flown in a closed circuit by almost 65%. Just over one month later, its flight across the South Atlantic to Brazil raised the straight-line distance record by 482 nm (894 km; 555 miles).



(Germany)

ZEPPELIN LZ 127 'GRAF ZEPPELIN'

First flight 18 September 1928

Passenger-carrying airship

Power plant: Five Maybach VL 2 twelve-cylinder piston engines (each 580 hp)

Length overall: 236.60 m (776 ft 3 in)

Max diameter: 30.50 m (100 ft 1¼ in)

Gas volume: 105,000 m³ (3,708,040 cu ft) in 17 compartments

Payload: 15,000 kg (33,070 lb), including 24 passengers

Max level speed: 69 knots (128 km/h; 79.5 mph)

Cruising speed: 59 knots (110 km/h; 68 mph)

Max range: 6,475 nm (12,000 km; 7,456 miles)

Record for distance in a straight line (dirigibles):

*29 Oct–1 Nov 1928

Dr Hugo Eckener 3,445.108 nm (6,384.500 km;
3,967.137 miles)

*still standing in 1978

Most successful passenger-carrying airship of all time, the *Graf Zeppelin* demonstrated its potential in 1929 by making the first flight around the world by an airship. Captained by Dr Hugo Eckener, it left Lakehurst, New Jersey, on 8 August, crossed the Atlantic to Friedrichshafen, Germany, and flew on via Tokyo, Japan, and Los Angeles, California, to arrive back at Lakehurst on the 29th. Total journey time was 21 days 7 hr 34 min. It was used later on the first passenger-carrying airline services across both the North and South Atlantic, logging well over a million miles and carrying around 13,100 passengers before being scrapped at the beginning of the second World War.

These two photographs of the *Graf Zeppelin* were taken during a visit to England. The huge airship is shown opposite over Wembley Stadium





(UK)

SUPERMARINE S.6

First flight 10 August 1929

Single-seat twin-float monoplane

Power plant: One Rolls-Royce 'R' twelve-cylinder Vee-type piston engine (1,900 hp)

Wing span: 9.14 m (30 ft 0 in)

Length overall: 8.18 m (26 ft 10 in)

Height: 3.73 m (12 ft 3 in)

Wing area: 13.47 m² (145.00 sq ft)

Weight empty (S.6A): 2,028 kg (4,471 lb)

T-O weight (S.6A): 2,618 kg (5,771 lb)

Records for speed over a 50 km closed circuit:

7 Sep 1929

Fg Off Richard L. R. Atcherley Spithead
(Calshot) 288.93 knots (535.09 km/h; 332.49 mph)

Record for speed over a 100 km closed circuit:

7 Sep 1929

Fg Off Richard L. R. Atcherley Spithead
(Calshot) 288.28 knots (533.90 km/h; 331.75 mph)

The three consecutive victories which gained the Schneider Trophy outright for Britain were all achieved by Supermarine racing seaplanes, designed by R. J. Mitchell

In addition to winning the 1929 Schneider Trophy contest, the S.6 shown in these photographs set a world speed record which was not, unfortunately, ratified

and flown by pilots of the RAF High Speed Flight. While winning the 1927 contest in an S.5 (N220), Flt Lt N. Webster also established a new world speed record over 100 km at 246.494 knots (456.506 km/h; 283.660 mph). The 1929 contest was won by Fg Off H. R. D. Waghorn in an S.6 (N247). The second S.6 (N248) was disqualified for missing a turning point, but set new records around 50 km and 100 km closed circuits. Five days after the contest, Sqn Ldr A.H. Orlebar attained a measured speed of 310.651 knots (575.700 km/h; 357.723 mph) in Waghorn's aircraft. This is often listed as a world absolute record; in fact, it was never ratified.





(France)

BLÉRIOT 110

First flight 16 May 1930

Two-seat monoplane (also known as 'Blériot Zappata')

Data: 1933 record aircraft

Power plant: One Hispano-Suiza twelve-cylinder Vee-type piston engine (500 hp)

Wing span: 26.50 m (86 ft 11¼ in)

Length overall: 14.57 m (47 ft 9⅝ in) (*tail up*)



As with Lindbergh's *Spirit of St Louis*, the pilot of the Blériot 110 had no forward view past the huge fuel tanks which filled the front fuselage. The outside world was visible only through portholes on each side

Height: 4.90 m (16 ft 1 in) (*tail up*)

Wing area: 80.00 m² (861.11 sq ft)

Weight empty: 2,980 kg (6,570 lb)

T-O weight: approx 9,000 kg (19,840 lb)

Max level speed: 113 knots (210 km/h; 130.5 mph)

Record for distance in a straight line:

5-7 Aug 1933

Maurice Rossi and Paul Codos New York-Rayak

4,912.942 nm (9,104.700 km; 5,657.387 miles)

Records for distance in a closed circuit:

*26 Feb-1 Mar 1931

Lucien Bossoutrot and Maurice

Rossi Oran 4,760.571 nm (8,822.325 km; 5,481.928 miles)

23-26 Mar 1932

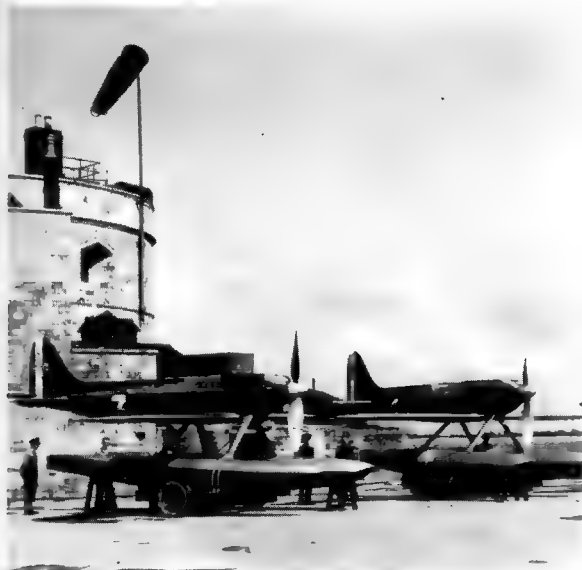
Lucien Bossoutrot and Maurice

Rossi Oran 5,720.612 nm (10,601.480 km; 6,587.442 miles)

*600 hp Hispano-Suiza

The Blériot 110 was one of a number of special aircraft ordered by the French government for record-breaking purposes. Another was the Dewoitine D 33, of which both examples were lost during attempts on the straight-line distance record. The Blériot was named after Joseph Le Brix, navigator on many famous flights, who had been killed in the crash of the second D 33 in the Ural mountains.





Opposite: S1595, which won the Schneider Trophy outright for Britain and then set a world speed record that stood for 2½ years. Above: the other members of Britain's 1931 Schneider team, an S 6B and uprated S.6, at Calshot

First flight 29 July 1931

Single-seat twin-float monoplane

Power plant: One Rolls-Royce 'R' twelve-cylinder Vee-type piston engine (2,550 hp)

Wing span: 9.14 m (30 ft 0 in)

Length: 8.79 m (28 ft 10 in)

Height: 3.73 m (12 ft 3 in)

Wing area: 13.47 m² (145.00 sq ft)

Weight empty: 2,082 kg (4,590 lb)

T-O weight: 2,760 kg (6,086 lb)

Record for speed:

29 Sep 1931

Flt Lt George H. Stainforth Lee-on-Solent 353.873 knots (655.800 km/h; 407.494 mph)

The S.6B is remembered as the aircraft which won the Schneider Trophy outright for Britain, the first aeroplane to set a speed record at over 400 mph, and the aircraft which provided its designer, R. J. Mitchell with the experience and inspiration to develop the Spitfire fighter a few years later. Winning pilot in the 1931 Schneider contest was Flt Lt John N. Boothman. In the absence of opposition from abroad, he had only to fly over the course at 295.52 knots (547.30 km/h; 340.08 mph) to be sure of victory. The true capability of the S.6B was proved seventeen days later when Flt Lt G. H. Stainforth raised the absolute speed record by 77 knots (142 km/h; 88 mph) in the same aircraft (S1595).



(USA)

GEE BEE SUPER SPORTSTER R-1

First flight 13 August 1932

Single-seat monoplane

Power plant: One Pratt & Whitney Wasp T3D1 nine-cylinder radial piston engine (730 hp)

Wing span: 7.62 m (25 ft 0 in)

Length: 5.41 m (17 ft 8 in)

Height: 2.49 m (8 ft 2 in)



Above: 'Jimmy' Doolittle taxiing his 1932 Thompson Trophy winner, the Super Sportster R-1. Opposite Super Sportster R-2

Wing area: 9.29 m² (100.00 sq ft)

Weight empty: 835 kg (1,840 lb)

Max T-O weight (racing): 1,095 kg (2,415 lb)

Cruising speed: 226 knots (418 km/h; 260 mph)

Max rate of climb: 1,860 m (6,100 ft)/min

Max range: 803 nm (1,488 km; 925 miles)

Record for speed (landplanes):

3 Sep 1932

Major James H. Doolittle Cleveland 255.676 knots
(473.820 km/h; 294.418 mph)

Of all the minimum airframe/maximum engine designs produced for the US National Air Races in the 'thirties, the Gee Bee Super Sportster R-1 and R-2 were, perhaps, best known and most notorious. Both eventually crashed, killing their pilots; but they also carried off every honour within reach at the hands of men like 'Jimmy' Doolittle. Since winning the 1925 Schneider Trophy contest, this great airman had become the first pilot to fly 'blind' successfully on instruments alone, on 24 September 1929. In the Gee Bee R-1, he not only set a new world speed record for landplanes (above) during the Shell Speed Dashes in the 1932 National Air Races at Cleveland: two days later he flew it to first place in the Thompson Trophy Race at an average speed of 219.6 knots (406.7 km/h; 252.7 mph) around ten laps of the ten-mile course. Ten years later, he was to become his nation's most renowned military pilot by leading the first raid on Tokyo, by B-25 bombers which took off at sea from the USS *Hornet*.



First flight (Vespa I) September 1925

Two-seat biplane

Data: Standard Vespa VI

Power plant: One Bristol Jupiter VII F nine-cylinder radial piston engine (530 hp); record aircraft fitted with Bristol Pegasus S.3 of 525 hp



Above: Cyril Uwins, chief test pilot of the Bristol company, with A.H.R. (later Sir Roy) Fedden and Rex Pierson, designers of the Jupiter engine and Vespa respectively

Wing span: 15.24 m (50 ft 0 in)

Length: 9.91 m (32 ft 6 in)

Height: 3.20 m (10 ft 6 in)

Wing area: 53.51 m² (576.00 sq ft)

Weight empty: 1,323 kg (2,917 lb)

T-O weight: 1,982 kg (4,370 lb)

Max level speed: 129 knots (239 km/h; 148.5 mph) at 3,050 m (10,000 ft)

Service ceiling: 8,140 m (26,700 ft)

Record for height:

16 Sep 1932

Capt Cyril F. Uwins Bristol 13,404 m (43,976 ft)

Superior height had been considered one of the combat pilot's greatest assets since the first World War, when many victories went to men who dived on their prey from 'out of the sun'. Great emphasis was, therefore, placed on high-altitude research in the 'thirties, testing supercharged engines, variable-pitch propellers, oxygen systems and special flying suits. By comparison with what came later, the Vespa was fairly orthodox. The RAF showed scant interest in the slim-bodied biplane with its huge, lightly-loaded wings; but the Bolivians ordered six Mk IIIs, one of which was flown from La Paz (still the world's highest airport) to Illampu Lake at 7,620 m (25,000 ft) with an unsupercharged engine and without oxygen. With a supercharged engine and large-diameter propeller, the experimental Vespa VII brought the absolute height record to Britain for the first time since Latham's 1910 flights in an Antoinette.



(UK)

FAIREY LONG RANGE MONOPLANE

First flight 14 November 1928

Two-seat long range monoplane

Power plant: One Napier Lion XIA/NS twelve-cylinder

Vee-type piston engine (530 hp)

Wing span: 24.99 m (82 ft 0 in)

Length overall: 14.78 m (48 ft 6 in)

Height over cockpit (tail down): 3.66 m (12 ft 0 in)



Wing area: 78.97 m² (850.00 sq ft)

Weight empty: 3,719 kg (8,200 lb)

T-O weight: 7,938 kg (17,500 lb)

Cruising speed: 95.5-100 knots (177-185 km/h;
110-115 mph)

Max range (estimated): 4,776 nm (8,850 km; 5,500
miles)

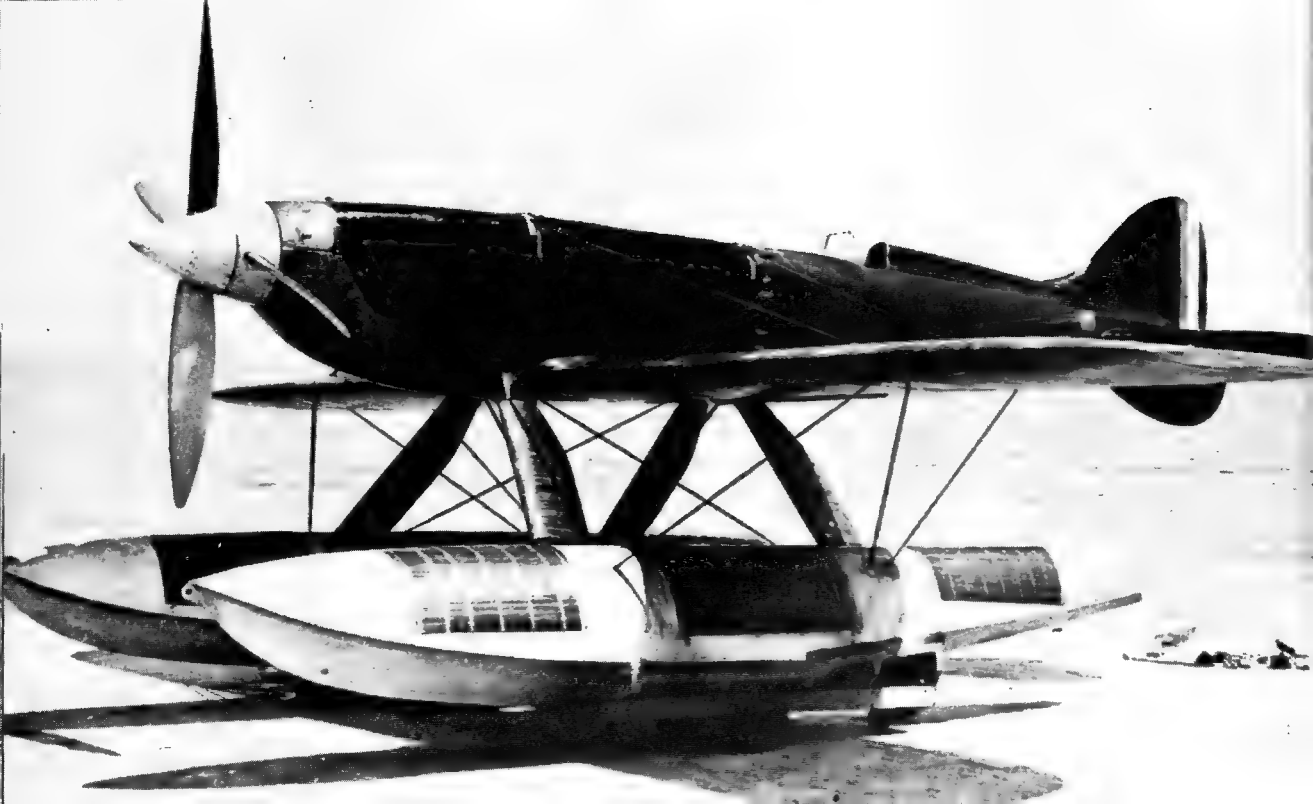
Record for distance in a straight line:

6-8 Feb 1933

Sqn Ldr O. R. Gayford and Flt Lt G. E.

Nicholetts Cranwell-Walvis Bay, SW Africa 4,610 nm
(8,544 km; 5,309 miles)

Two examples of the Fairey Long Range Monoplane were built and used in record attempts. The original aircraft (J9479) was designed and built specially for the job after the failure of earlier attempts with a Hawker Horsley biplane. Except for the massive non-retractable landing gear, it had truly elegant lines, and could carry more than 1,000 Imp gallons (4,550 litres) of fuel in its huge cantilever wing. In it, Sqn Ldr A. G. Jones-Williams and Flt Lt N. H. Jenkins flew non-stop 3,589 nm (6,646 km; 4,130 miles) from Cranwell to Karachi on 24-26 April 1929. This first non-stop flight from the UK to India was too short to break the world record. In a second attempt, this time with South Africa as the target, the aircraft crashed in Tunisia, killing its crew. A replacement was built in 1931, differing mainly in the addition of wheel fairings and an autopilot. This aircraft (K1991) set the record listed above.



(Italy)

MACCHI M.C.72

First flight June 1931

Single-seat twin-float monoplane

Power plant: One Fiat AS.6 twenty-four-cylinder Vee-type piston engine (2,800/3,100 hp)

Wing span: 9.48 m (31 ft 1¼ in)



Above: W/O Francesco Agello and the M.C.72. Its incredibly slim fuselage housed a unique power plant. Known as the Fiat AS.6, this comprised two lightweight 12-cylinder AS.5s in tandem, each driving one of the two contra-rotating propellers

Length: 8.32 m (27 ft 3½ in)

Height: 3.30 m (10 ft 10 in)

Wing area: 15.00 m² (161.46 sq ft)

Weight empty: 2,500 kg (5,511 lb)

T-O weight: 2,907 kg (6,409 lb)

Records for speed:

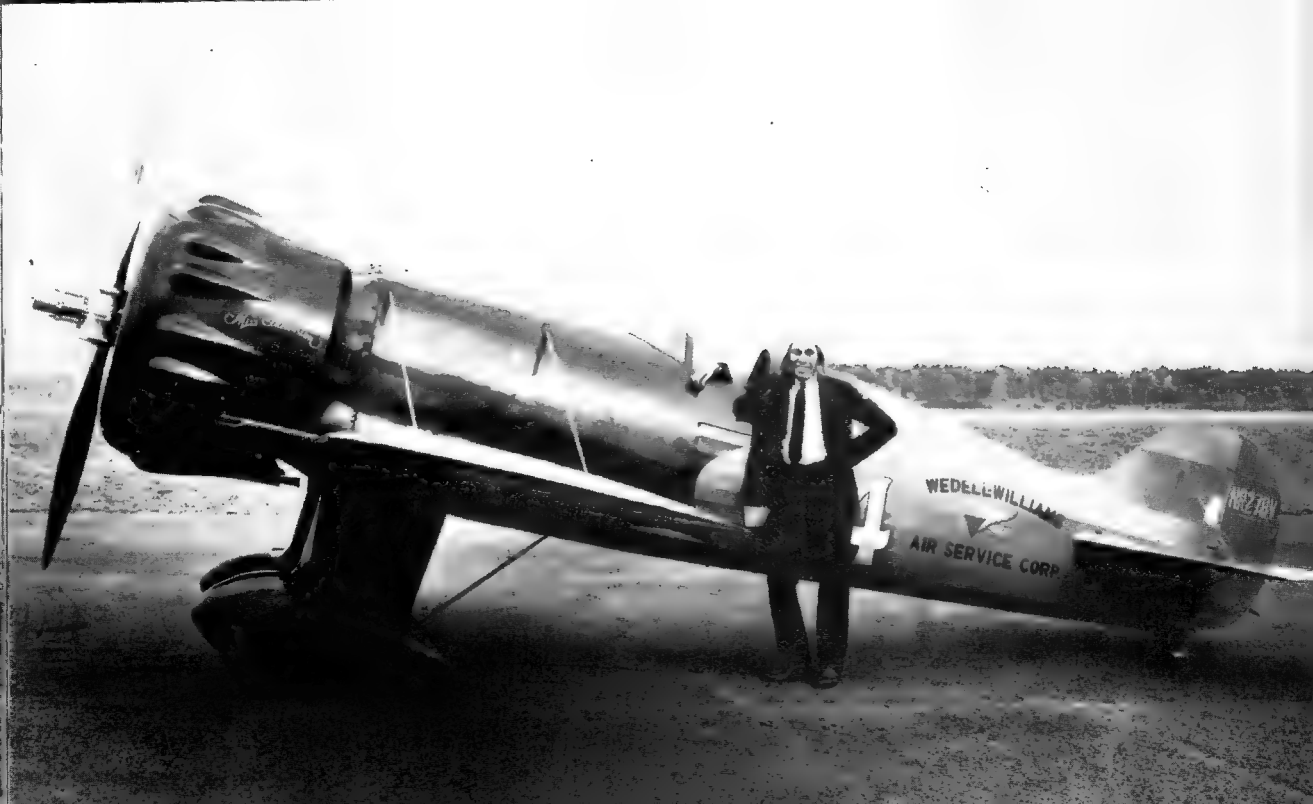
10 Apr 1933

W/O Francesco Agello Desenzano 368.053 knots
(682.078 km/h; 423.822 mph)

23 Oct 1934

Ten Francesco Agello Desenzano 382.693 knots
(709.209 km/h; 440.681 mph)

It was, perhaps, as well for Britain that Macchi was unable to have the M.C.72 ready in time to compete in the 1931 contest for the Schneider Trophy. To this day, many Italians consider that Britain's decision to simply fly over the course and claim the Trophy, in the absence of other entries, was unsporting. Had Boothman not done so, the Trophy would have been lost for ever. The 1931 Supermarines had been financed privately in a period of economic depression, and it is doubtful if another rich benefactor would have appeared in subsequent years. All that Macchi could do was to demonstrate the M.C.72's potential by setting two successive absolute speed records. The October 1934 record has never been beaten by a piston-engined seaplane. Neither has a record of 339.833 knots (629.370 km/h; 391.072 mph) around a 100 km closed circuit set by G. Cassinelli in the M.C.72 on 8 October 1933.



(USA)

WEDELL-WILLIAMS 44

First flight 1930

Single-seat racing monoplane

Power plant: One Pratt & Whitney R-1340 Wasp nine-cylinder radial piston engine (800 hp)

Wing span: 7.98 m (26 ft 2 in)

Length: 6.48 m (21 ft 3 in)

Wing area: 12.08 m² (130.00 sq ft)



Opposite: James Wedell with the Wedell-Williams 44. Above: Roscoe Turner, another of the highly successful Wedell-Williams pilots

Weight empty: 685 kg (1,510 lb)

T-O weight: 1,005 kg (2,216 lb)

Record for speed (landplanes):

4 Sep 1933

James R. Wedell Chicago 264.450 knots

(490.080 km/h; 304.521 mph)

The name of James Wedell sparked briefly in America in the early 'thirties and then was gone. He produced his Wedell-Williams 44 in 1930 as a conversion of a sporting two-seater powered originally by a 225 hp Wright engine. After achieving 182 knots (338 km/h; 210 mph) with a Hispano fitted, he reduced the aircraft's span and length in 1931 and re-engined it with a 550 hp Wasp Junior. In this form, the aircraft finished second in the Thompson Trophy Race, with the result that Wedell was joined at the 1932 Nationals by Roscoe Turner and James Haizlip flying similar aircraft. Haizlip, Wedell and Turner finished first, second and third respectively in the Bendix Trophy Race. In the Thompson, Wedell was second behind Doolittle, only 10 mph slower with 250 fewer horsepower; Turner and Haizlip were in third and fourth places. Results in 1933 were even more spectacular. Wedell won the Thompson, then installed the engine from Doolittle's 1932 Gee Bee and set a new world record for landplanes (above). Turner set a new record of 11 hr 30 min from New York to Los Angeles while winning the Bendix Race in a 900 hp Wedell-Williams. Before the 1934 Nationals, Jimmy Wedell was killed in a training accident.



(France)

POTEZ 506

First flight December 1932

Single-seat biplane

Data: 1936 record aircraft

Power plant: One Gnome-Rhône 14 Kbrs fourteen-cylinder radial piston engine (840 hp)

Wing span: 18.60 m (61 ft 0¼ in)

Length: 9.40 m (30 ft 10 in)

Height: 3.638 m (11 ft 11¼ in)

Wing area: 57.60 m² (620.00 sq ft)



Weight empty: 1,470 kg (3,241 lb)

T-O weight: 2,280 kg (5,026 lb)

Max level speed: 164.5 knots (305 km/h; 189.5 mph) at 3,500 m (11,480 ft)

Theoretical ceiling: 14,700 m (48,230 ft)

Records for height:

28 Sep 1933

Gustave Lemoine Villacoublay 13,661 m (44,819 ft)

14 Aug 1936

Georges Détré Villacoublay 14,843 m (48,697 ft)

Record for height (women):

*23 Jun 1936

Maryse Hilsz 14,310 m (46,949 ft)

**Still standing in 1978*

The basic Potez 50.A2 was a two-seat general-purpose combat aircraft evolved from the earlier Type 25.A2, of which more than 3,500 had been built for some twenty countries. Engine power was increased from 450 to 700 hp and the airframe was cleaned up, giving a considerable improvement in overall performance. A special version known as the Potez 506 (above), with extended wings, a single open cockpit, and a geared and supercharged engine, gained the world height record. Within seven months, an Italian Caproni climbed higher; but the 506 proved capable of further development and again held the height record for just over one month in 1936.



First flight June 1933

Three-seat twin-float amphibian monoplane

Data: SEV-3XAR

Power plant: One Wright R-975-E2 Whirlwind nine-cylinder radial piston engine (420 hp)

Wing span: 10.97 m (36 ft 0 in)

Length: 7.82 m (25 ft 8 in)

Height: 2.97 m (9 ft 9 in)

Wing area: 19.35 m² (208.30 sq ft)

Weight empty: 1,084 kg (2,390 lb)

T-O weight: 1,474 kg (3,250 lb)

Max level speed: 165 knots (306 km/h; 190 mph) at S/L

Max rate of climb at S/L: 500 m (1,640 ft)/min

Service ceiling: 6,155 m (20,200 ft)

Record for speed (amphibians):

'9 Oct 1933

Major Alexander P. de Seversky (SEV-3XAR) New York (Roosevelt Field) 155.946 knots (289.000 km/h; 179.576 mph)

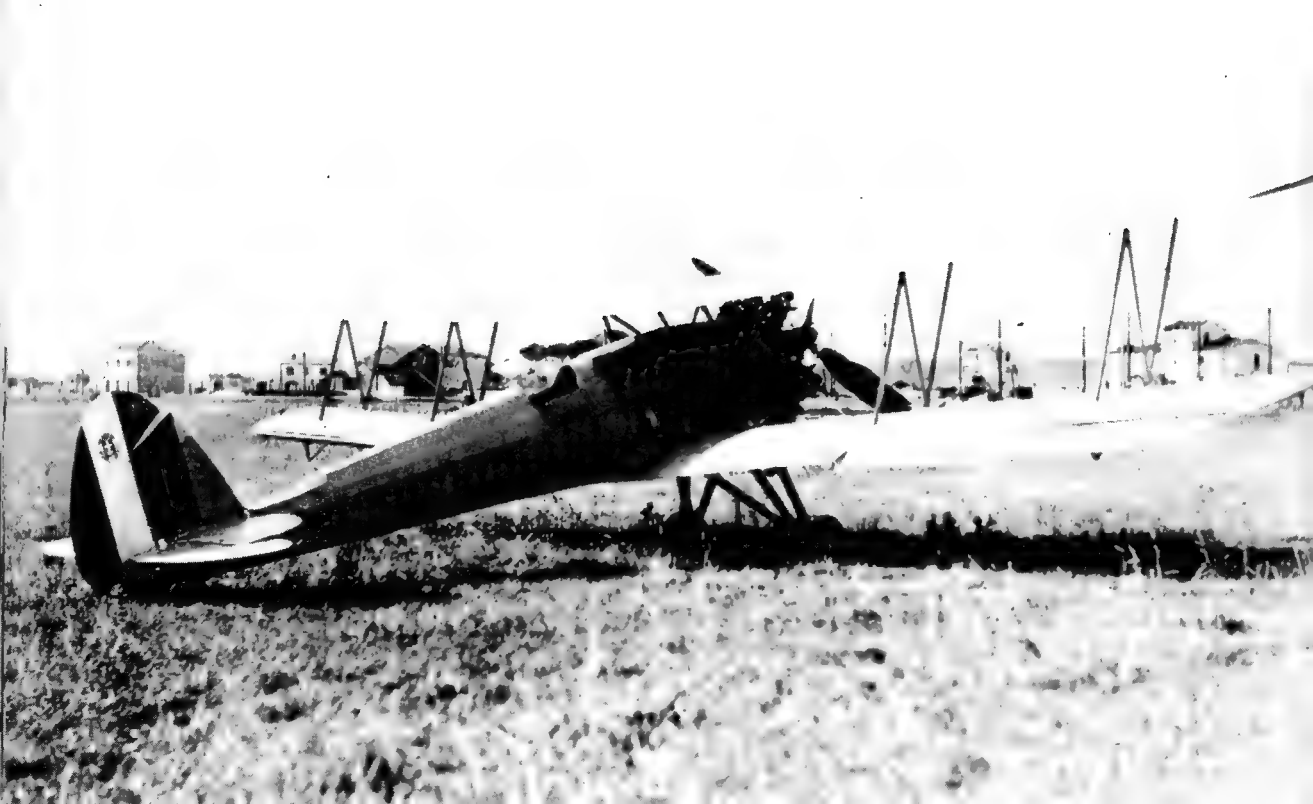
*15 Sep 1935

Major Alexander P. de Seversky (SEV-3M-WW) Detroit 200.093 knots (370.814 km/h; 230.413 mph)

**710 hp Wright R-1820-F3 Cyclone; still unbeaten in 1978*

The Seversky Aircraft Corporation was incorporated in February 1931 by Major Alexander P. de Seversky, whose aviation career had begun as a Second Lieutenant in the Russian Imperial Naval Air Service in 1915. During his first night bombing flight, his seaplane was shot down at sea, and Seversky's right leg was blown off by his own bomb in the ensuing crash. This did not prevent his becoming third ranking Russian fighter ace, with 13 victories. When sent to the USA in 1917 as a member of a Russian mission, he stayed there after the Revolution and founded the Seversky company, out of which grew the famous Republic Aviation Corporation. The SEV-3XAR, which was the first product of the US Seversky Company, was converted to a landplane in 1934 and eventually sold to Mexico. From it were developed a line of similar designs that were to lead to the celebrated Republic P-47 Thunderbolt fighter of the Second World War.

Major Alexander de Seversky with the SEV 3XAR in its record-setting amphibious form



(Italy)

CAPRONI Ca 113 and Ca 161

First flight (Ca 161) 1936 (?)

Single-seat biplane

Data: Ca 161 bis

Power plant: One Piaggio P.XI RC.100 fourteen-cylinder radial piston engine (700 hp)

Wing span: 14.25 m (46 ft 9 in)

Length: 8.25 m (27 ft 0¾ in)

Height: 3.50 m (11 ft 5¾ in)

Wing area: 35.50 m² (382.12 sq ft)



Opposite: The modified Ca 113 (sometimes called the Ca 114) used for the 1934/35 record flights. Above: Cdt Renato Donati boarding the aircraft

Record for height (modified Ca 113 with 530 hp Bristol Pegasus nine-cylinder radial engine):

11 Apr 1934

Cdt Renato Donati Rome 14,433 m (47,352 ft)

Record for height (women), in same Ca113:
1935

Contessa Carina Negrone 12,010 m (39,403 ft)

Records for height (Ca 161):

8 May 1937

Ten Col Mario Pezzi Montecelio 15,655 m (51,361 ft)

*22 Oct 1938

Ten Col Mario Pezzi Montecelio 17,083 m (56,046 ft)

Seaplane record for height (Ca 161 Idro NS):

25 Sep 1939

Ten Col Nicola di Mauro 13,542 m (44,429 ft)

**Ca 161 bis; this record still unbeaten in 1978 by a piston engined aeroplane*

The basic Ca 113 was a two-seat advanced trainer with a 370 hp Piaggio Stella VII engine. It was not built in any numbers, but a modified version, with increased wing area and a supercharged Pegasus engine, set a world height record in 1934. The Ca 161 was a further development of the same design, with two-bay wings and more powerful engine. With its pilot clad in a special pressure-suit, it waged a battle for the height record against the Bristol 138, finally setting a record that still stands.



(France)

CAUDRON C460

First flight 1934

Single-seat monoplane

Power plant: One Renault R-428 six-cylinder inverted in-line piston engine (370 hp)

Wing span: 6.75 m (22 ft 1³/₄ in)

Length: 7.125 m (23 ft 4¹/₂ in)

Height: 1.81 m (5 ft 11¹/₄ in)

Wing area: 7.00 m² (75.35 sq ft)

Weight empty: 590 kg (1,300 lb)

T-O weight: 950 kg (2,094 lb)



Michel Détrouyat at the 1936 US National Air Races

Record for speed:

25 Dec 1934

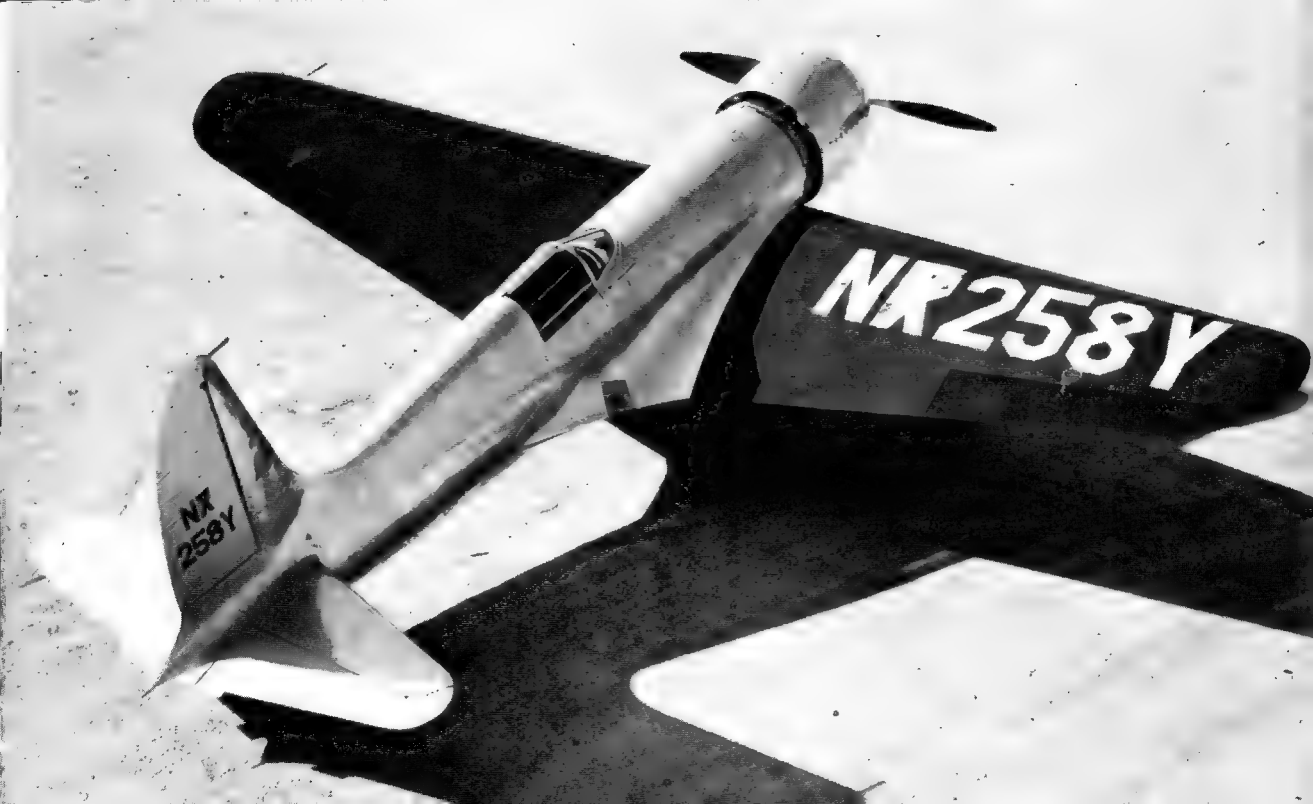
Raymond Delmotte Istres 272.958 knots

(505.848 km/h; 314.188 mph)

The all-wooden C460 was developed to take part in the 1934 Coupe Deutsch de la Meurthe contest, limited to landplanes with an engine swept volume of less than eight litres. In the event, it did not compete. Instead it set a new world landplane speed record (above), then went on to win the 1935 Coupe Deutsch (again piloted by Delmotte) at an average speed of 239.7 knots (443.9 km/h; 276 mph) around the 2,000 km course.*

The United States had introduced a similar kind of race in the 1933 Nationals, in the shape of the Greve Trophy competition with an engine limit of 550 cu in (9.01 litres). Although the National Air Races had been virtually all-American up to the mid-thirties, it was decided to send the C460 to the States in 1936. Piloted by Michel Détrouyat, it became the only racer ever to win both the Greve and Thompson Trophies. US pilots were so incensed by what they considered to be an intrusion by a government-subsidised foreign aircraft that France never returned to defend its titles and no other nation ventured into American pre-war racing.

*During this contest, the C460 set new speed records over 100 and 1,000 km, at 253.2 knots (469 km/h; 291.4 mph) and 240.8 knots (446 km/h; 277 mph) respectively.



(USA)

HUGHES H-1

First flight 17 August 1935

Single-seat monoplane

Power plant: One Pratt & Whitney R-1535-SA1G Twin Wasp Junior fourteen-cylinder two-row radial piston engine (700/1,000 hp)

Wing span: 7.62 m (25 ft 0 in)

Length overall: 8.36 m (27 ft 5 in)

Height overall: approx. 2.46 m (8 ft 1 in)



Illustrations show the H-1 in its long-span (opposite) and short-span (above) configurations

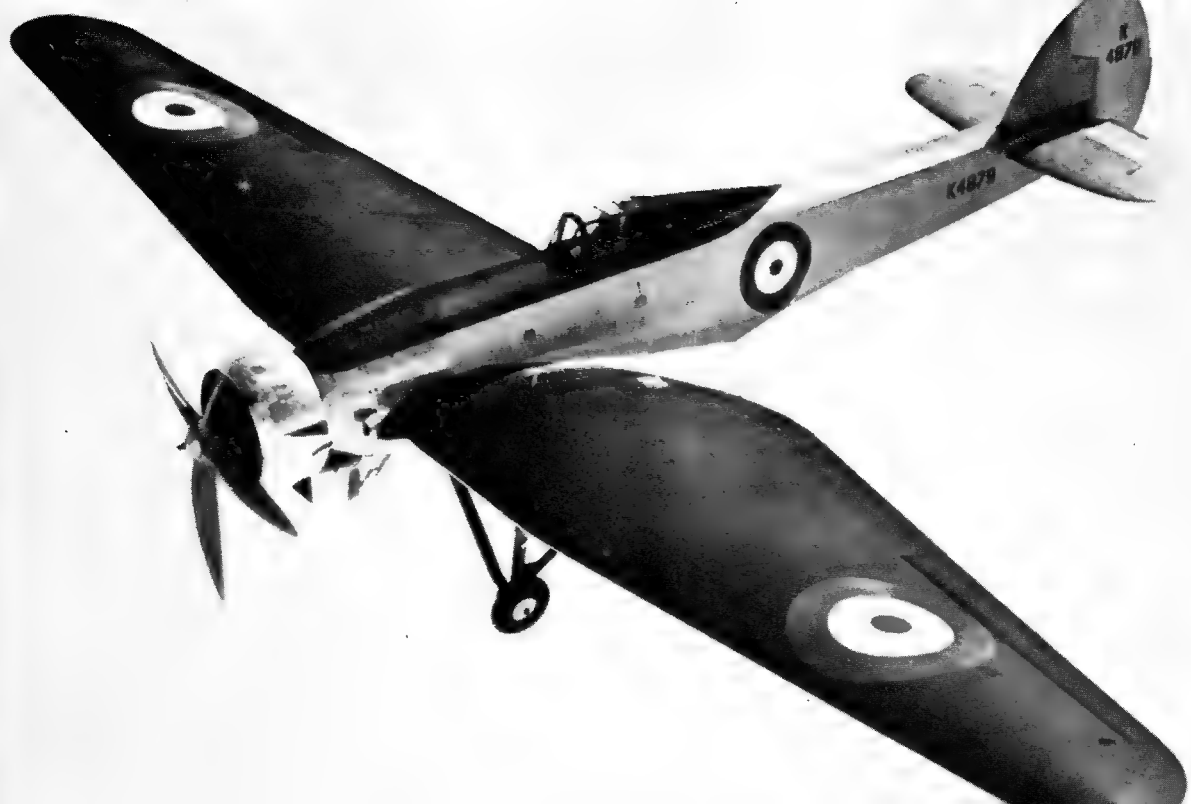
Design T-O weight: 2,222 kg (4,900 lb), probably exceeded with tanks full

Record for speed:

13 Sep 1935

Howard Hughes Santa Ana 306.018 knots
(567.115 km/h; 352.388 mph)

Howard Hughes is remembered today as an eccentric millionaire who died in tragic circumstances in 1976. A kinder assessment, in Reed Kinert's history of *US Racing Planes and Air Races*, Vol III, states: "Hughes was an exacting but superb pilot—and had money to do as he liked. It is to his credit that he did so much to further aviation". The H-1, designed to Hughes' ideas by Richard Palmer, was the first aircraft to have a flush-riveted metal fuselage, with butt-jointed panels to give a completely smooth surface finish. It had two alternative sets of plywood-skinned wings, of which the shorter-span set (above) were used for the speed record attempt. When Hughes heard that certain racing pilots were so frustrated at the thought of having to compete with the H-1 in the Thompson race that they burst into tears, he withdrew his entry. Instead he continued his record-breaking with a non-stop transcontinental dash from Los Angeles to New York in the H-1 in 7 hr 28 min 10 sec, at an average 288.5 knots (534 km/h; 332 mph) on 17 January 1937. In July 1938, with a four-man crew, he flew round the northern hemisphere of the world in 3 days 19 hr 14 min in the Lockheed 14 *New York World's Fair 1939*.



(UK)

BRISTOL TYPE 138A

First flight 11 May 1936

Single-seat high-altitude research monoplane

Power plant: One Bristol Pegasus P.E.6S nine-cylinder radial piston engine (500 hp)

Wing span: 20.12 m (66 ft 0 in)

Length: 13.41 m (44 ft 0 in)

Height: 3.12 m (10 ft 3 in)

Wing area: 52.77 m² (568.00 sq ft)

Weight empty: 1,992 kg (4,391 lb)

T-O weight: 2,408 kg (5,310 lb)

Max level speed: 107 knots (198 km/h; 123 mph) at S/L

Max rate of climb: 436 m (1,430 ft)/min at 12,190 m (40,000 ft)

Service ceiling: 16,460 m (54,000 ft)

Endurance: 2 hr 15 min

Records for height:

28 Sep 1936

Sqn Ldr F. R. D. Swain South Farnborough 15,223 m (49,944 ft)

30 Jun 1937

Flt Lt M. J. Adam South Farnborough 16,440 m (53,937 ft)

Many of the aircraft used for attacks on the world height record in the 'twenties and 'thirties were powered by Bristol engines. When the British Air Ministry decided to order a special aircraft for high-altitude research, to Specification 2/34, it was logical therefore to award the contract to the Bristol Aeroplane Company. The resulting Bristol Type 138A was a typical long-span monoplane of all-wood construction, with a non-retractable landing gear and a Pegasus engine with two superchargers, the second of which came into use above about 35,000 ft. Only four months after its first flight, it recaptured the height record for Britain, with its pilot attired in an oxygen helmet and pressure suit. The Caproni Ca 161 climbed to an even greater height in the Spring of 1937. Within weeks, the 138A was lightened by removal of the brakes and fitting of smaller wheels. With propeller pitch changed, it added more than 750 m (2,500 ft) to the record; but this was its limit and no attempt was made to beat the further record set by the Caproni in 1938.

Bristol Type 138A photographed above Farnborough during its June 1937 record flight



First flight August 1935

Passenger-carrying twin-float monoplane

Data: Z.506C

Power plant: Three Alfa Romeo 126 RC.34 nine-cylinder radial piston engines (each 750 hp)

Wing span: 26.50 m (86 ft 11¼ in)

Length: 18.92 m (62 ft 1 in)

Height: 6.77 m (22 ft 2½ in)

Wing area: 87.00 m² (936.46 sq ft)

Weight empty: 7,200 kg (15,873 lb)

T-O weight: 10,500 kg (23,148 lb)

Max level speed: 205 knots (380 km/h; 236 mph) at 4,000 m (13,125 ft)

Service ceiling: 8,000 m (26,250 ft)

Range: 701 nm (1,300 km; 808 miles)

Records for speed over a closed circuit (seaplanes), Z.506C:

27-28 May 1938

Mario Stoppani 173.786 knots (322.058 km/h; 200.118 mph) over 1,000 km

Mario Stoppani 172.555 knots (319.776 km/h; 198.700 mph) over 2,000 km

**Mario Stoppani* 166.330 knots (308.244 km/h; 191.534 mph) over 5,000 km

Z.509: 30 Mar 1938

Mario Stoppani* 217.832 knots (403.424 km/h; 250.676 mph) over 1,000 km

CRDA CANT Z.509

Mario Stoppani* 214.073 knots (396.464 km/h; 246.351 mph) over 2,000 km

Record for distance in a straight line (seaplanes), Z.506B:
Dec 1937

Mario Stoppani Cadiz-Caravelas 3,788 nm (7,020 km; 4,362 miles)

Records for height with payload (seaplanes):

7 Nov 1937, Z.506C

**Mario Stoppani* 7,410 m (24,311 ft) with 5,000 kg

Mario Stoppani 7,810 m (25,623 ft) with 2,000 kg

Record for height with payload (seaplanes), Z.506B:
12 Nov 1937

**Nicola di Mauro* 10,389 m (34,085 ft) with 1,000 kg

Record for distance in a closed circuit (seaplanes), Z.506C:

27-28 May 1937

**Mario Stoppani and Carlo*

Tonini Monfalcone 4,516 nm (5,200 km; 3,231 miles)

**Still unbeaten in 1978*

****qualifying also for speed with payloads of 1,000 and 2,000 kg**

This 12/16-passenger transport seaplane was built for Ala Littoria (five Z.506 with Wright Cyclone engines: ten Z.506C as above) and for military use as the Z.506B Airone. The commercial aircraft were operated mainly from Rome and Trieste to Cadiz, Marseilles and Brindisi. The Z.509 was a variant with 1,000 hp Fiat A.80 engines which did not go into service.



БЛТН-АНТЗ
БАН-АНТЗ

Сталинский маршрут

(USSR)

TUPOLEV ANT-25

First flight 22 June 1933

Three/four-seat long range monoplane

Data: ANT-25-1 *Stalinski Marshrut*

Power plant: One Mikulin M-34R twelve-cylinder Vee-type piston engine (950 hp)

Wing span: 34.00 m (111 ft 6½ in)

Length overall: 13.08 m (42 ft 11 in)

Height overall: 3.70 m (12 ft 1¾ in)



Opposite: NO25, the ANT-25 commanded by Valeri Chkalov. Above: NO25-1, the record-breaking ANT-25 of Mikhail Gromov

Wing area: 88.20 m² (949.38 sq ft)

Weight empty: 4,200 kg (9,259 lb)

Max T-O weight: 11,280 kg (24,868 lb)

Max level speed: 133 knots (246 km/h; 153 mph)

Service ceiling: 3,000 m (9,845 ft)

Max range: 7,015 nm (13,000 km; 8,078 miles)

Max endurance: 80 hr

Record for distance in a straight line:

12-14 Jul 1937

Col Mikhail M. Gromov, Cmdt Andrei B. Yumashchev and Ing Sergei A. Danilin Moscow-San Jacinto via North Pole 5,476 nm (10,148 km; 6,306 miles)

The ANT-25 was designed by P.O. Sukhoi under the leadership of Andrei Tupolev for an attempt on the world record for distance in a straight line, from Moscow to the United States, via the North Pole. The first crew to set out, on 17 June 1937, comprised Valeri Chkalov (pilot in command), Georgi Baidukov (co-pilot) and Alexander Belyakov (navigator). Heavily overloaded with 6,240 kg (13,760 lb) of fuel and oil, the big monoplane might never have become airborne had not the fence been removed at the end of the grass airfield. After flying through appalling conditions, the ANT-25 landed at Vancouver, Washington, 63 hr and 16 min later. This first trans-polar flight in history did not break the distance record; but within one month a second attempt was made by Gromov, Yumashchev and Danilin (above), taking the record to the Soviet Union for the first (and, so far, only) time.



LATECOERE
521

F

LATECOERE 521

37 TONNES

PARIS

First flight 17 January 1935

Passenger-carrying flying-boat

Power plant: Six Hispano-Suiza 12 Nbr twelve-cylinder

Vee-type piston engines (each 650 hp)

Wing span: 49.314 m (161 ft 9½ in)

Length overall: 31.62 m (103 ft 9 in)

Height: 9.07 m (29 ft 9 in)

Wing area: 330.00 m² (3,552.09 sq ft)

Weight empty: 18,882 kg (41,628 lb)

Max T-O weight: 41,500 kg (91,492 lb)

Max level speed: 138 knots (256 km/h; 159 mph) at 3,000 m (9,845 ft)

Service ceiling: 6,300 m (20,670 ft)

Max range: 3,172 nm (5,878 km; 3,652 miles)

Record for distance (seaplanes):

25-26 Oct 1937

Henri Guillaumet and crew of 5 Port Lyautey-Maceio (Brazil) 3,114 nm (5,771 km; 3,586 miles)

Records for speed with payload over 1,000 km closed circuit:

*27 Dec 1937

Henri Guillaumet and crew of 5 113.858 knots (211.002 km/h; 131.110 mph) with 10,000 kg

*29 Dec 1937

Henri Guillaumet and crew of 5 102.385 knots (189.741 km/h; 117.899 mph) with 15,000 kg

Record for height with payload:

*30 Dec 1937

Henri Guillaumet and crew of 5 3,508 m (11,509 ft) with 15,000 kg

Record for payload to height:

*30 Dec 1937

Henri Guillaumet and crew of 5 18,040 kg (39,771 lb) to 2,000 m (6,560 ft)

**still unbeaten in 1978*

Powered originally by six 800/860 hp Hispano-Suiza 12 Ybrs engines, the Laté 521 was intended to carry 30 passengers on transatlantic services and 70 on Mediterranean routes. It made its first flight to North America, from Biscarosse via Dakar, Natal and Martinique, in December 1935, but sank at Pensacola during a typhoon. After rebuilding with 12 Nbr engines, it set the records listed, and had begun proving flights to New York when the second World War started. Taken over by the French Navy, it was damaged beyond repair when its hangar was blown up by the Germans in August 1944.



HEINKEL

D-1UOS



(Germany)

HEINKEL He 100

First flight 22 January 1938

Single-seat fighter monoplane

Data: He 100 D-1

Power plant: One Daimler-Benz DB 601M twelve-cylinder inverted-Vee piston engine (1,020 hp)

Wing span: 9.42 m (30 ft 10 in)

Length overall (tail up): 8.20 m (26 ft 10³/₄ in)

Height overall (tail up): 2.50 m (8 ft 2¹/₂ in)

Wing area: 14.50 m² (156.08 sq ft)

Weight empty: 2,070 kg (4,563 lb)

T-O weight: 2,500 kg (5,511 lb)

Max level speed: 361.5 knots (670 km/h; 416 mph) at 4,000 m (13,125 ft)

Max rate of climb at S/L: 1,000 m (3,281 ft)/min

Service ceiling: 11,000 m (36,100 ft)

Range: 480 nm (890 km; 553 miles)

Record for speed over a 100 km closed circuit (He 100 V2):

6 Jun 1938

Gen Ernst Udet Wüstrow-Müriz-Wüstrow 342.650 knots (635.000 km/h; 394.570 mph)

Record for absolute speed (He 100 V8):

30 Mar 1939

Flugkapitän Hans Dieterle Orianenburg 402,871 knots (746.604 km/h; 463.917 mph)

After supplying Germany's new Luftwaffe with its most spectacular initial fighter, the He 51 biplane, Ernst Heinkel was bitterly disappointed when Generalmajor Ernst Udet informed him that he must concentrate on bombers, leaving Willy Messerschmitt as the main fighter manufacturer. He decided to prove the competence of his designers by capturing the world absolute speed record with a new fighter, which evolved eventually as the He 100. Udet stole much of the early glory by displacing Heinkel's own pilot for the record flight over a 100 km closed circuit that preceded the attack on the absolute record. His V2 aircraft had an 1,100 hp DB 601A and wings spanning 9.42 m (30 ft 10³/₄ in). The V8, which established the first absolute speed record held by a landplane for more than eleven years, had an 1,800 hp DB 601R and 7.60 m (24 ft 11¹/₄ in) wings. Production was limited to twelve He 100 D-1s.



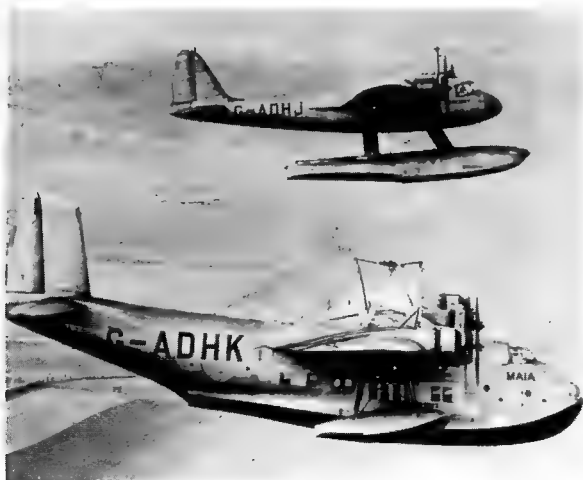
(UK)

SHORT-MAYO S.20 'MERCURY'

First flight 5 September 1937
(first air launch 6 February 1938)

Two-seat twin-float cargo monoplane; air-launched from
S.21 flying-boat 'Maia'

Power plant: Four Napier Rapier VI sixteen-cylinder H-
type piston engines (each 370 hp)



Wing span: 22.25 m (73 ft 0 in)

Length: 15.53 m (50 ft 11½ in)

Height: 6.17 m (20 ft 3 in)

Wing area: 56.76 m² (611.00 sq ft)

Weight empty: 4,610 kg (10,163 lb)

T-O weight (air launch): 12,474 kg (27,500 lb)

Max level speed: 169 knots (314 km/h; 195 mph)

Normal range: 3,387 nm (6,276 km; 3,900 miles)

Record for distance in a straight line (seaplanes):

*6-8 Oct 1938

Capt Donald C. T. Bennett and First Officer Ian

*Harvey Dundee-Orange River 5,208.3 nm (9,652 km;
5,997.5 miles)*

**still unbeaten in 1978*

Upper component of the Short-Mayo composite aircraft, 'Mercury' was carried into the air atop, and subsequently launched from, the 'mother' flying-boat 'Maia'. This enabled it to fly long distances, by taking advantage of the fact that any aircraft can fly with a greater weight of fuel or payload than it can lift off the ground or water. The technique was proposed as a method of making non-stop transatlantic commercial operations possible at a time when production aircraft lacked the range for such services. Before making his distance record flight (above), Capt Bennett (later renowned as leader of the wartime RAF Pathfinders) parted from 'Maia' off Foynes, Ireland, and flew 2,546 nm (4,715 km; 2,930 miles) to Montreal, Canada, on 21-22 July.



First flight 19 June 1935

Two/three-seat bomber monoplane

Power plant: One Bristol Pegasus XXII nine-cylinder radial piston engine (1,010 hp)

Wing span: 22.73 m (74 ft 7 in)

Length: 11.96 m (39 ft 3 in)

Height: 3.76 m (12 ft 4 in)

Wing area: 58.53 m² (630.00 sq ft)

Weight empty: 2,828 kg (6,235 lb)

Normal T-O weight: 5,035 kg (11,100 lb)

Max overload T-O weight: 8,346 kg (18,400 lb)

Max level speed: 198 knots (367 km/h; 228 mph) at 5,180 m (17,000 ft)

Max rate of climb at S/L: 332 m (1,090 ft)/min

Service ceiling: 9,905 m (32,500 ft)

Range: 1,150 nm (2,132 km; 1,325 miles) at normal max T-O weight; 1,971 nm (3,653 km; 2,270 miles) at max overload T-O weight

Records for distance in a straight line:

5-7 Nov 1938

Flt Lt H. A. V. Hogan, Flt Lt R. G. Musson and Sgt T. D. Dixon Ismailia-Koepang 5,782.109 nm (10,715.448 km; 6,658.258 miles)

5-7 Nov 1938

Sqn Ldr R. Kellett, Flt Lt R. T. Gething and Plt Off M. L. Gaine Ismailia-Darwin 6,216.477 nm (11,520.421 km; 7,158.444 miles)

5-7 Nov 1938

Flt Lt A. N. Combe, Flt Lt B. K. Burnett and Sgt H. G. Gray Ismailia-Darwin 6,216.477 nm (11,520.421 km; 7,158.444 miles)

The Wellesley was built by Vickers as a private venture, using the unique geodetic type of construction conceived by Sir Barnes Wallis and employed even more successfully in the Wellington bomber. Recognising the Wellesley's long-range potential, the Air Ministry modified three standard aircraft from the final production batch by fitting a Pegasus XXII engine in a long-chord cowl, extra fuel tanks and a seat for a third crew member. Piloted by crews from the RAF Long-range Development Flight, the three Wellesleys took off from Egypt on 5 November 1938. Two reached Australia, as planned; the other lacked fuel to cross the Timor Sea but still exceeded the old record handsomely. The second World War prevented further straight-line distance record flights until November 1945.



(Germany)

MESSERSCHMITT Me 209 V1

First flight 1 August 1938

Single-seat monoplane

Power plant: One Daimler Benz DB 601ARJ twelve-cylinder inverted-Vee piston engine (2,300 hp)

Wing span: 7.80 m (25 ft 7 in)

Length overall (tail up): 7.24 m (23 ft 9 in)

Height overall (tail up): approx 3.20 m (10 ft 6 in)

T O weight: 2,515 kg (5,545 lb)

Record for absolute speed:

26 Apr 1939

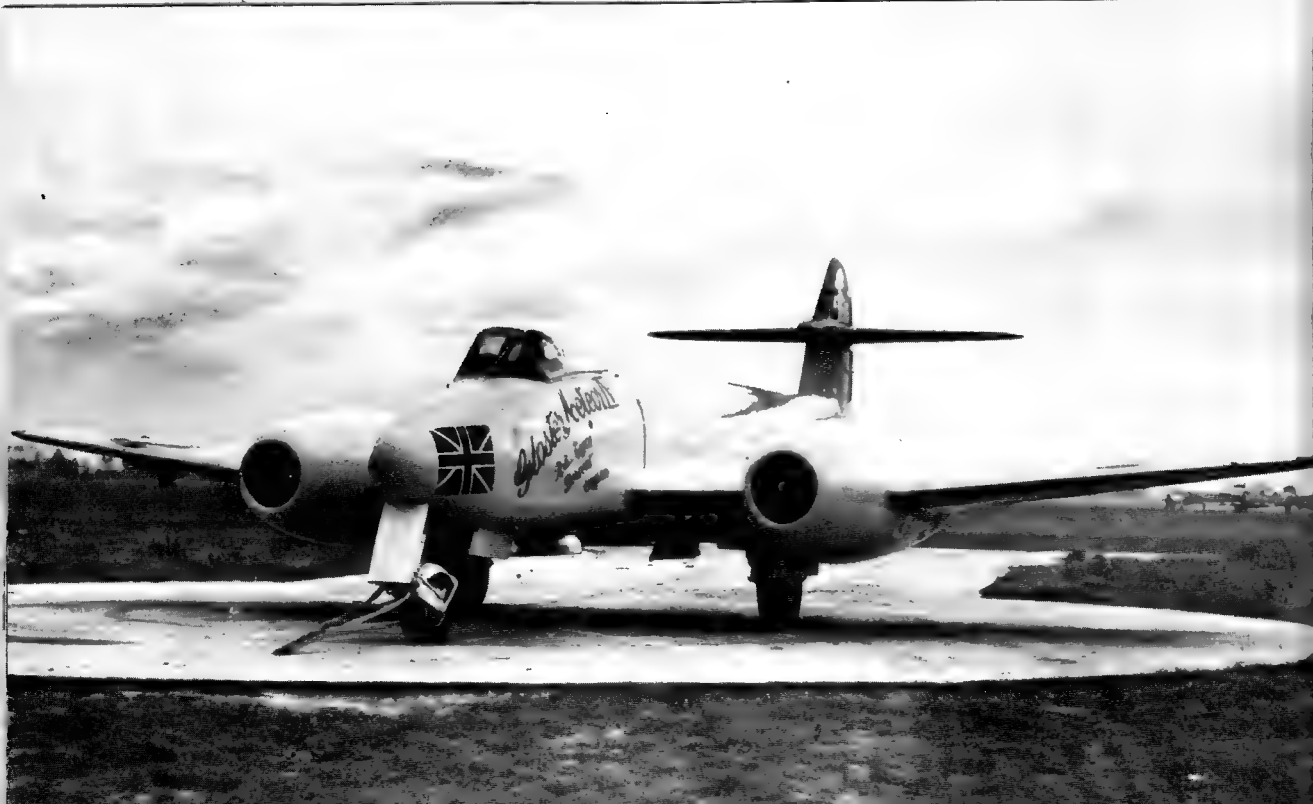
Flugkapitan Fritz Wendel Augsburg 407.476 knots
(755.138 km/h; 469.220 mph)

Competition between Messerschmitt and Heinkel led to considerable skulduggery. The He 100 record-breakers were referred to as He 112Us, to make potential foreign customers believe that the He 112 fighter was in production when, in fact, it had been rejected in favour of the Messerschmitt Bf 109. Less than a month after Dieterle set his absolute record, it was beaten by what the official FAI records still describe as the Bf 109R. This aircraft had really been built specially, as the smallest and cleanest pure speed machine that would contain a DB 601 engine and pilot. Fritz Wendel described it as "a

Built for the sole purpose of capturing the absolute speed record for Germany, the Me 209 V1 was far more powerful and every bit as ugly as the aircraft built in the 'thirties for the US National Air Races. A photograph of its pilot appears on page 217

monstrosity; a vicious little brute". Nonetheless, he set a record in it; people outside Germany believed it to be a specially prepared example of the Luftwaffe's standard fighter; and there was little point in Ernst Heinkel expecting to be allowed to spoil the illusion of Luftwaffe superiority that had been created, by proving that the much more refined He 100 fighter could do better still. In any case, there were more important matters on which to concentrate from September of that year. By the time the second World War had ended, in 1945, jets were replacing piston engines, and the record set by the ugly little Me 209 stood for more than thirty years as a 'best' for aeroplanes with piston engines.





(UK)

GLOSTER METEOR F Mk 4

First flight 5 March 1943

Single-seat fighter

Power plant: Two Rolls-Royce Derwent 5 turbojet engines (each 1,905 kg; 4,200 lb st)

Wing span: 11.33 m (37 ft 2 in)

Length overall: 12.50 m (41 ft 0 in)

Height overall: 3.96 m (13 ft 0 in)

Wing area: 32.52 m² (350.00 sq ft)

Weight empty: 4,558 kg (10,050 lb)

T-O weight: 6,385 kg (14,078 lb)

Max level speed: 508 knots (941.5 km/h; 585 mph) at S/L



Opposite: EE455 *Britannia*, one of the two re-engined Meteor 3s used for the 1945 record flights. Above: Meteor 4 EE530, long-span trainer for the 1946 record series

Max rate of climb at S/L: 2,286 m (7,500 ft)/min

Service ceiling: 14,935 m (49,000 ft)

Records for absolute speed:

7 Nov 1945

Gp Capt H. J. Wilson Herne Bay 526.587 knots (975.875 km/h; 606.379 mph)

7 Sep 1946

Gp Capt Edward M. Donaldson Littlehampton 534.748 knots (991.000 km/h; 615.778 mph)

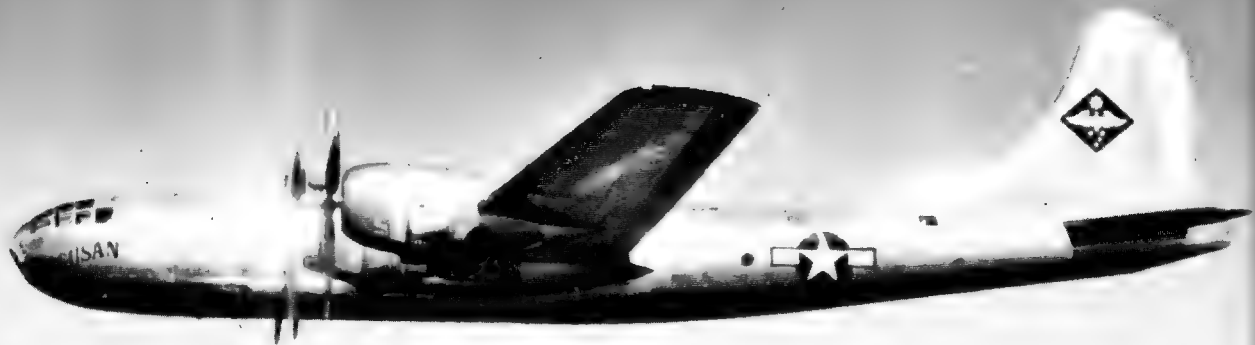
Record for speed over a 100 km closed circuit:

6 Feb 1948

Sqn Ldr William A. Waterton Moreton

Valence 471.493 knots (873.775 km/h; 542.940 mph)

In July 1944, the original Gloster Meteor Mk I became the first jet aircraft to enter RAF service, initially against V-1 flying-bombs over the UK and later in more conventional operations over the Continent. When the war ended, no other Allied jets had been used in action, and the Meteor was well situated to raise the world absolute speed record by an unprecedented margin. This it did first in November 1945, beating the old record by nearly 30%. The Meteor 4s allocated to the RAF High Speed Flight for the 1946 attempts had long-span (13.1 m; 43 ft) wings instead of the clipped variety fitted to operational Mk. 4s, as the latter were found to reduce maximum speed by almost 50 knots (93 km/h; 58 mph) as the price paid for improved rate of roll and structural integrity.



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BOEING B-29 SUPERFORTRESS

Long range bomber

Power plant: Four Wright R-3350-51 Cyclone eighteen-cylinder two-row radial piston engines (each 2,200 hp)

Wing span: 43.05 m (141 ft 3 in)

Length: 30.175 m (99 ft 0 in)

Height: 9.02 m (29 ft 7 in)

Wing area: 161.28 m² (1,736.00 sq ft)

Weight empty: 31,298 kg (69,000 lb)

T-O weight: 62,369 kg (137,500 lb)

Max level speed: 316 knots (586 km/h; 364 mph) at 7,620 m (25,000 ft)

Time to 6,100 m (20,000 ft): 38 min

Service ceiling: 9,750 m (32,000 ft)

Range: 3,647 nm (6,760 km; 4,200 miles)

Records for speed over a closed circuit:

*28 Jun 1946

Capt J. Bauer and crew 293.863 knots (544.590 km/h; 338.392 mph) over 5,000 km

*29-30 Jul 1947

Lt Col O. F. Lassiter and crew 237.245 knots
(439.665 km/h; 273.195 mph) over 10,000 km

Records for speed with payload over a 1,000 km closed circuit:

*17 May 1946

Lt E. M. Grabowski and crew 321.045 knots



(594.963 km/h; 369.692 mph) with 1,000, 2,000 and 5,000 kg

*19 May 1946

Capt J. D. Barlett and crew 310.658 knots
(575.714 km/h; 357.731 mph) with 10,000 kg

Records for speed with payload over a 2,000 km closed circuit:

*17 May 1946

Lt E. M. Grabowski and crew 317.534 knots
(588.456 km/h; 365.649 mph) with 1,000, 2,000 and 5,000 kg

*19 May 1946

Capt J. D. Barlett and crew 310.053 knots
(574.593 km/h; 357.035 mph) with 10,000 kg

Records for speed with payload over a 5,000 km closed circuit:

*28 Jun 1946

Capt J. Bauer and crew 293.863 knots (544.590 km/h; 338.392 mph) with 1,000 and 2,000 kg

*21 Jun 1946

Lt Col G. Ruegg and crew 231.017 knots
(428.123 km/h; 266.023 mph) with 5,000 and 10,000 kg

Records for height with payload:

*16 May 1946

Major F. F. Ross and crew 14,603 m (47,910 ft) with

Pacusan Dreamboat's later feats included a non-stop flight from Hickam Field, Hawaii, to Cairo, Egypt, in slightly under 40 hr, despite adverse weather

1,000 kg

*13 May 1946

Col E. D. Reynolds and crew 14,180 m (46,522 ft) with 2,000 kg

*14 May 1946

Lt J. P. Tobison and crew 13,793 m (45,253 ft) with 5,000 kg

*8 May 1946

Capt A. A. Pearson and crew 12,688 m (41,627 ft) with 10,000 kg

*11 May 1946

Col J. B. Warren and crew 12,046 m (39,521 ft) with 15,000 kg

Record for payload to height:

*11 May 1946

Col J. B. Warren and crew 15,166 kg (33,435 lb) to 2,000 m (6,560 ft)

Record for distance in a straight line (B-29B):

12 Nov 1945

Col C. S. Irvine and Lt Col Stawley Northwest-Washington 6,874.347 nm (12,739.591 km; 7,915.600 miles)

Record for distance in a closed circuit:

1-3 Aug 1947

Lt Col O. F. Lassiter and crew Tampa, Florida 7,689.186 nm (14,249.656 km; 8,854.309 miles)

**still unbeaten in 1978*



(USA)

First flight 17 May 1945

Maritime patrol bomber

Power plant: Two Wright R-3350-8 Cyclone C-18 eighteen-cylinder two-row radial piston engines (each 2,300 hp); four JATO units (each 454 kg; 1,000 lb st) used to take off for record flight



LOCKHEED P2V-1 NEPTUNE

Wing span: 30.48 m (100 ft 0 in)

Length: 23.825 m (78 ft 2 in)

Height: 8.56 m (28 ft 1 in)

Wing area: 92.90 m² (1,000.00 sq ft)

Weight empty: 14,949 kg (32,957 lb)

Max T-O weight: 38,782 kg (85,500 lb)

Max level speed: 263 knots (488 km/h; 303 mph) at 4,665 m (15,300 ft)

Service ceiling: 8,230 m (27,000 ft)

Normal range: 3,569 nm (6,614 km; 4,110 miles)

Record for distance in a straight line:

* 29 Sep-1 Oct 1946

Cdr Thomas D. Davies and crew of 3 Perth-Columbus 9,757.132 nm (18,081.990 km; 11,235.606 miles)

* *still unbeaten by a piston-engined aircraft in 1978*

The specially prepared P2V-1, 'Truculent Turtle', used in this long-standing record flight was the third of an initial batch of fifteen production Neptunes for the US Navy. This version equipped squadron VP-ML-2, and was followed by seven other major variants, giving a total of 843 aircraft for the US Navy, plus many more for other nations.

Two years after commanding *Truculent Turtle* (opposite page) on its still-unbeaten record flight, Cdr T. D. Davies flew a Neptune off the deck of the *USS Coral Sea*. It was, at that time, the largest aircraft ever to have taken off from a carrier



(USA)

First flight 8 January 1944

Single-seat fighter

Power plant: One Allison J33-A-23 turbojet engine
(2,086 kg; 4,600 lb st)



Identified by its serial number and small canopy, the record-setting XP-80R is shown before and during its 19 June 1947 flights at what is now Edwards Air Force Base in California's Mojave Desert

LOCKHEED XP-80R SHOOTING STAR

Length: 10.52 m (34 ft 6 in)

Height: 3.45 m (11 ft 4 in)

Weight empty: 3,667 kg (8,084 lb)

T-O weight: 5,427 kg (11,965 lb)

Max level speed: 504.5 knots (935 km/h; 581 mph) at
S/L

Combat ceiling: 13,440 m (44,100 ft)

Record for absolute speed:

19 Jun 1947

Col Albert Boyd Muroc 541.768 knots
(1,003.995 km/h; 623.855 mph)

The P-80A Shooting Star was the US Army Air Force's first operational jet aircraft. Development began in June 1943, and the No. 1 prototype XP-80 flew with a British de Havilland H-1 turbojet installed. American production plans for this power plant collapsed, and a change to the Allison J33 was made in the remaining XP-80A prototypes. Only two Shooting Stars reached a combat area (Italy) before the end of the war, and the type was not used in action until the Korean War of the 'fifties. Meanwhile, one of the initial batch of 500 P-80As was modified for an attempt on the world speed record, as the XP-80R. The standard J33-A-17 engine was changed for an A-23 with water-alcohol injection. The wings were clipped from the standard 12.17 m (39 ft 11 in), a smaller canopy was fitted, and the entire airframe was given a high-speed finish. Having raised the record, the aircraft was used to evaluate NACA flush air intakes.



(USA)

DOUGLAS D-558-I SKYSTREAK

First flight 28 May 1947

Single-seat research aircraft

Power plant: One Allison J35-A-23 turbojet (1,814 kg; 4,000 lb st) initially; later fitted with J35-A-11 of 2,268 kg (5,000 lb st)

Wing span: 7.62 m (25 ft 0 in)

Length: 10.69 m (35 ft 1 in)

Height: 3.71 m (12 ft 2 in)

Wing area: 13.94 m (150.00 sq ft)

Weight empty: 2,767 kg (6,100 lb)

T-O weight: 4,422 kg (9,750 lb)

Records for absolute speed:

20 Aug 1947

Cdr Turner F. Caldwell Muroc 556.429 knots
(1,031.178 km/h; 640.743 mph)

25 Aug 1947

Major Marion E. Carl Muroc 565.256 knots
(1,047.536 km/h; 650.907 mph)

Frequent accidents experienced as aircraft approached the speed of sound pointed to the urgent need for a planned and progressive high-speed research programme in the immediate postwar period. The Skystreak was conceived as early as 1945, one year after the first

military jets entered service, with the aim of obtaining in free flight air-load measurements which were not then obtainable in wind tunnels. Less than three months after the first flight of the first of three Skystreaks, it was decided to attack the absolute speed record without breaking into the research programme. Thus, the aircraft which set the above records had a take-off weight of more than 4,536 kg (10,000 lb), and carried approximately 870 litres (230 US gallons) of fuel and 290 kg (640 lb) of special instrumentation.



Major Marion E. Carl, US Marine Corps, after setting his new world speed record



(UK)

First flight 20 September 1943

Single-seat fighter

Power plant: One de Havilland Ghost turbojet engine
(2,268 kg; 5,000 lb st)



The far-from-immaculate appearance of John Cunningham's long span Vampire TG278, shown in these photographs, reminds us that even the weight of a coat of paint can knock a few precious feet off the height to which an aeroplane can climb

DE HAVILLAND D.H.100 VAMPIRE Mk 1

Wing span: 14.63 m (48 ft 0 in)

Length: 9.37 m (30 ft 9 in)

Height: 2.69 m (8 ft 10 in)

Record for speed over a 100 km closed circuit:
31 Aug 1947

John Cunningham Lympne 431.492 knots
(799.644 km/h; 496.875 mph)

Record for absolute height:

23 Mar 1948

John Cunningham Hatfield 18,133 m (59,492 ft)

The prototype Vampire was flown only 16 months after detail design was started. When production F Mk 1s entered service just after the war, they were the first jet fighters with a top speed of more than 500 mph to serve with any air force. This enabled former night fighter 'ace' John Cunningham to set a new speed record around a 100 km circuit in August 1947. In the following year, the third production Vampire (TG278) was fitted with a 1.22 m (4 ft) extension to each wingtip and a special canopy for use as a high-altitude testbed for the new Ghost turbojet. During subsequent trials, Cunningham set the first height record claimed by a jet. The women's 100 km closed circuit record also fell to a Vampire (built in France as the Mistral, with a Nene engine) on 12 May 1951, when Mme Jacqueline Auriol, daughter-in-law of the French President, averaged 447.5 knots (828.8 km/h; 515 mph) between Istres and Avignon.



First flight 25 October 1940

Single-seat fighter

Data: standard P-51C; 1,450 hp engine

Power plant: One Packard V-1650-7 (Rolls-Royce Merlin) twelve-cylinder Vee-type piston engine (1,695 hp)

Wing span: 11.28 m (37 ft 0¼ in)

Length: 9.83 m (32 ft 3 in)

Height: 2.64 m (8 ft 8 in)

Wing area: 21.65 m² (233.00 sq ft)

Weight empty: 3,168 kg (6,985 lb)

T-O weight: 4,445 kg (9,800 lb)

Max level speed: 381 knots (706.5 km/h; 439 mph) at 7,620 m (25,000 ft)

Time to 9,150 m (30,000 ft): 12 min 6 sec

Service ceiling: 12,770 m (41,900 ft)

Normal range: 829 nm (1,537 km; 955 miles)

Record for speed over a 3 km course, restricted altitude (women):

17 Dec 1947

Miss Jacqueline Cochran 357.787 knots
(663.054 km/h; 412.002 mph)

Record for speed over a 15/25 km course, unrestricted altitude:

*9 Apr 1951

Miss Jacqueline Cochran 403.268 knots
(747.339 km/h; 464.374 mph)

A standard P-51C Mustang of the kind flown by Jacqueline Cochran

Records for speed over a closed circuit:

*10 Dec 1947

Miss Jacqueline Cochran 407.762 knots
(755.668 km/h; 469.549 mph) over 100 km

*29 Dec 1949

Miss Jacqueline Cochran 379.545 knots
(703.376 km/h; 437.057 mph) over 500 km

*24 May 1948

Miss Jacqueline Cochran 374.367 knots
(693.780 km/h; 431.094 mph) over 1,000 km

*22 May 1948

Miss Jacqueline Cochran 388.588 knots
(720.134 km/h; 447.470 mph) over 2,000 km

**qualifying also as women's records; all 10 records, and the 3 km speed record, still unbeaten in 1978*

Jacqueline Cochran is one of those remarkable women pilots whose achievements rival in every way those of their male counterparts. She had her first job at the age of eight, in a cotton mill, at six and a half cents an hour. Today she is one of the most admired women in the world, a table companion of Presidents and royalty, holder of international speed records in the women's and all-comers' categories, with more than 200 trophies to recall her flying career. As early as 1938 she won the Bendix Trophy race in a Seversky SEV-S2, setting a women's west-east transcontinental record of 10 hr 7 min 10 sec in the process. In 1953, she not only set speed records in a Canadair Sabre but became the first woman to dive an aircraft at above the speed of sound.



(USA)

NORTH AMERICAN F-86A-1 SABRE

First flight 1 October 1947

Single-seat fighter

Power plant: One General Electric J47-GE-1 turbojet engine (2,200 kg; 4,850 lb st)

Wing span: 11.30 m (37 ft 1 in)



Opposite: The F-86A in which Major Richard L. Johnson (above) set his 1948 speed record

Length: 11.43 m (37 ft 6 in)

Height: 4.47 m (14 ft 8 in)

Wing area: 26.75 m² (287.90 sq ft)

Weight empty: 4,571 kg (10,077 lb)

T-O weight 'clean': 6,399 kg (14,108 lb)

Max level speed: 590 knots (1,093 km/h; 679 mph) at S/L

Max rate of climb at S/L: 2,091 m (6,860 ft)/min

Service ceiling: 14,720 m (48,300 ft)

Range: 682 nm (1,263 km; 785 miles)

Record for absolute speed:

15 Sep 1948

Major Richard L. Johnson Muroc 582.688 knots
(1,079.841 km/h; 670.981 mph)

North American Aviation gained the distinction of supplying the best American single-seat fighters of two wars. It is said that when Reichsmarschall Hermann Göring first saw P-51 Mustangs (page 120) escorting B-17 Fortress bombers all the way to Berlin, he exclaimed that Germany had now lost the war. In Korea, the Soviet-built MiG-15 displayed a speed, firepower and agility which came as a shock to United Nations forces. The F-86 Sabre was despatched to supplement and replace older US types. It was not superior to the MiG in its initial form; but its pilots were better trained, and by the end of the war the improved F-86F had mastered the opposition. In the Spring of the year in which the Sabre set its speed record (above), it became the first US fighter to exceed the speed of sound in a shallow dive.



USA)

NORTH AMERICAN F-86D SABRE

First flight 22 December 1949

Single-seat fighter

Power plant: One General Electric J47-GE-17 turbojet engine (2,585 kg; 5,700 lb st dry and 3,461 kg; 7,630 lb st with afterburning)

Wing span: 11.30 m (37 ft 1 in)

Length: 12.29 m (40 ft 4 in)

Height: 4.57 m (15 ft 0 in)

Wing area: 26.75 m² (287.90 sq ft)

Weight empty: 5,656 kg (12,470 lb)

T-O weight: 7,756 kg (17,100 lb)

Max level speed: 614 knots (1,138 km/h; 707 mph) at S/L

Max rate of climb at S/L: 5,425 m (17,800 ft)/min

Service ceiling: 16,640 m (54,600 ft)

Range: 726 nm (1,345 km; 836 miles)

Records for absolute speed:

19 Nov 1952

Capt J. Slade Nash Salton Sea 606.590 knots (1,124.137 km/h; 698.505 mph)

16 Jul 1953

Lt Col William F. Barnes Salton Sea 621.516 knots (1,151.798 km/h; 715.693 mph)

Initial versions of the F-86 Sabre, as flown in Korea (page 122), were strictly day fighters. By the late 'forties, developments in radar technology made possible the concept of the all-weather interceptor, fitted with a fire control system that would not only track an airborne target automatically, but could be linked electronically to the autopilot, to fly the aircraft towards the target and even fire the weapons automatically at the optimum time for a 'kill', afterwards causing the aircraft to 'break away' before the pilot resumed manual control for the homeward flight. The F-86D was the first Sabre to have such radar in a nosecone above its engine air intake. Higher power made possible the new records listed above. Salton Sea is about 72 m (235 ft) below sea level. High speeds were also made possible by temperatures of 76°F and 105°F respectively, Mach 1 being equivalent to 692 knots (1,282 km/h; 797 mph) at the latter temperature.

The F-86D in which Lt Col Barnes set the second absolute speed record achieved in this all-weather version of the Sabre



(UK)

ENGLISH ELECTRIC CANBERRA

First flight 13 May 1949

Three-seat bomber

Data: Canberra B Mk 2

Power plant: Two Rolls-Royce Avon RA.3 Mk 101 turbojet engines (each 2,948 kg; 6,500 lb st)

Wing span: 19.49 m (63 ft 11½ in)

Length overall: 19.96 m (65 ft 6 in)

Height: 4.775 m (15 ft 8 in)



Opposite WD952, the Olympus-engined Canberra testbed in which Wg Cdr Walter Gibb (above) set two absolute height records

Wing area: 89.19 m² (960.00 sq ft)

Weight empty: 10,070 kg (22,200 lb)

T-O weight: 20,865 kg (46,000 lb)

Max level speed: 495 knots (917 km/h; 570 mph) at 12,190 m (40,000 ft)

Max rate of climb at S/L: 1,158 m (3,800 ft)/min

Service ceiling: 14,630 m (48,000 ft)

Normal range: 2,306 nm (4,274 km; 2,656 miles)

Records for absolute height:

*4 May 1953

Wg Cdr Walter F. Gibb Bristol 19,406 m (63,668 ft)

**29 Aug 1955

Wg Cdr Walter F. Gibb Bristol 20,083 m (65,889 ft)

***28 Aug 1957

Michael Randrup and W. Shirley Luton 21,430 m (70,308 ft)

**Bristol Olympus 99 turbojets (each 3,629 kg; 8,000 lb st)*

***Bristol Olympus 102 turbojets (each 5,443 kg; 12,000 lb st)*

****Avon engines, plus one Napier Double Scorpion rocket motor*

Britain's first jet bomber, the Canberra B Mk 2 was used widely as a testbed for new types of power plant. Its first two absolute height records were set by aircraft WD952, with the usual Avons replaced by Olympus turbojets. The 1957 record was set by WK163, with a Double Scorpion rocket motor installed in its bomb-bay. It was the last British aeroplane to hold the height record.



(UK)

HAWKER HUNTER F Mk 3

First flight 20 June 1951

Single-seat fighter

Power plant: One Rolls-Royce Avon RA.7R turbojet engine (3,234 kg; 7,130 lb st dry and 4,354 kg; 9,600 lb st with afterburning)

Wing span: 10.26 m (33 ft 8 in)

Height: 4.01 m (13 ft 2 in)

Wing area: 31.59 m² (340.00 sq ft)

Record for absolute speed:

7 Sep 1953

Sqn Ldr Neville Duke Littlehampton 631.877 knots
(1,171.000 km/h; 727.624 mph)

Record for speed over a 100 km closed circuit:

19 Sep 1953

Sqn Ldr Neville Duke Littlehampton 615.905 knots
(1,141.400 km/h; 709.232 mph)

Gambling that there would be no major conflict for at least a decade after the end of the second World War, Britain's Air Ministry deferred manufacture of a new sweptwing jet fighter for the RAF until 1950, when the Hawker Hunter and Supermarine Swift were ordered into

production. Both types could exceed Mach 1 in a dive, and could clearly be 'souped up' into potential world record-breakers. The original Hunter prototype (WB188) was fitted with an afterburning Avon engine and a pointed nose and, as the all-red Hunter F Mk 3, first flew on 7 July 1953, two months later setting the records listed above. Hawker's chief test pilot, Neville Duke, was eighth-ranking RAF wartime combat pilot, with 28 victories.



With its new all-red paint-scheme and pointed nose, the re-engined Hunter F Mk 3 was almost unrecognisable as the original prototype. Neville Duke is seen in its cockpit (right)





These two photographs of Mike Lithgow's record-breaking Swift include a shot (above) taken during one of the speed runs in North Africa

First flight 5 August 1951

Single-seat fighter

Power plant: One Rolls-Royce Avon RA.7R turbojet engine (3,234 kg; 7,130 lb st dry and 4,354 kg; 9,600 lb st with afterburning)

Wing span: 9.86 m (32 ft 4 in)

Length: 12.64 m (41 ft 5½ in)

Height: 3.81 m (12 ft 6 in)

Wing area: 28.43 m² (306.00 sq ft)

Record for absolute speed:

25 Sep 1953

Lt Cdr Michael J. Lithgow Castel Idris 638.892 knots (1,184.00 km/h; 735.702 mph)

Less than three weeks after Neville Duke captured the absolute speed record in the Hunter Mk 3, his great friend and rival, Mike Lithgow, snatched it from him in the prototype Swift F Mk 4 (WK198). Taking a lesson from previous US record attempts, made in the low-altitude/high-temperature environment of the Salton Sea to raise the ambient speed of sound, Lithgow set his record in Libya. Another record set in the same aircraft was a London-Paris point-to-point time of 19 min 5.6 sec by Lithgow, on 5 July 1953; representing an average speed of 581.758 knots (1,077.417 km/h; 669.476 mph), it still stood in 1978. Despite its high performance, the Swift was not successful as a fighter and was switched to high-speed tactical reconnaissance duties with RAF Germany from 1956.



(USA)

DOUGLAS F4D-1 SKYRAY

First flight 23 January 1951

Single-seat fighter

Power plant: One Pratt & Whitney J57-P-2 turbojet engine (4,400 kg; 9,700 lb st dry and 6,123 kg; 13,500 lb st with afterburning)

Wing span: 10.21 m (33 ft 6 in)

Length overall: 13.93 m (45 ft 8¼ in)

Height: 3.96 m (13 ft 0 in)

Wing area: 51.75 m² (557.00 sq ft)

Weight empty: 7,268 kg (16,024 lb)

Max T-O weight: 11,340 kg (25,000 lb)

Max level speed: 603 knots (1,118 km/h; 695 mph) at 10,975 m (36,000 ft)

Max rate of climb at S/L: 5,486 m (18,000 ft)/min

Service ceiling: 16,765 m (55,000 ft)

Range: 1,042 nm (1,931 km; 1,200 miles)

Absolute record for speed:

*3 Oct 1953

Lt Cdr James B. Verdin Salton Sea 653.864 knots (1,211.746 km/h; 752.943 mph)

Record for speed over a 100 km closed circuit:

*16 Oct 1953

Robert O. Rahn Edwards AFB 632.296 knots

(1,171.777 km/h; 728.110 mph)

Records for time to height:

22 May 1958

Col Edward N. LeFaivre Point Mugu 3,000 m in 44.39 sec; 6,000 m in 1 min 6.13 sec; 9,000 m in 1 min 29.81 sec

23 May 1958

Col Edward N. LeFaivre Point Mugu 12,000 m in 1 min 51.23 sec; 15,000 m in 2 min 36.05 sec

**XF4D-1 with Westinghouse YJ40-WE-8 turbojet engine (5,262 kg; 11,600 lb st with afterburning)*

Dr Alexander Lippisch, pioneer of the delta wing, had preferred a tail-less sweptwing configuration for his wartime Me 163 rocket-powered interceptor. In the same way, when Ed Heinemann of Douglas studied US Navy proposals for a carrier-based delta fighter in 1947, he ended up with the tail-less sweptwing Skyray. One of the prototypes took the world absolute speed record back to America little more than a week after Mike Lithgow's successful attempt in the Swift. The 100 km closed circuit record followed. Five years later, the re-engined production version set five time-to-height records, as listed.

XF4D-1 prototype Skyray, used for the two successful speed record attempts in October 1953



(USA)

NORTH AMERICAN YF-100A and F-100C SUPER SABRE

First flight 25 May 1953

Single-seat fighter

Data: F-100C

Power plant: One Pratt & Whitney J57-P-21 turbojet engine (4,627 kg; 10,200 lb st dry and 7,257 kg; 16,000 lb st with afterburning)

Wing span: 11.91 m (38 ft 9³/₈ in)

Length: 14.36 m (47 ft 1¹/₄ in)

Height: 4.72 m (15 ft 6 in)

Wing area: 35.77 m² (385.00 sq ft)

Weight empty: 8,741 kg (19,270 lb)

T-O weight 'clean': 14,794 kg (32,615 lb)

Max level speed: 803 knots (1,489 km/h; 925 mph) at 10,670 m (35,000 ft)

Service ceiling: 11,795 m (38,700 ft)

Combat radius: 497 nm (920 km; 572 miles)

Records for absolute speed:

29 Oct 1953

Lt Col F. K. Everest (YF-100A) Salton Sea 655.781 knots (1,215.298 km/h; 755.150 mph)

20 Aug 1955

Col Horace A. Hanes (F-100C) Palmdale 713.958 knots (1,323.095 km/h; 822.135 mph)

The first prototype YF-100A exceeded the speed of sound in level flight during each of its first two test flights, so making the Super Sabre the first combat aircraft with true supersonic performance. On the day the first production F-100A made its maiden flight, the original prototype (with 5,987 kg; 13,200 lb st XJ57-P-7 engine) broke the absolute speed record over the Salton Sea. This, too, was a highly significant occasion. The FAI had long required such attempts to be made at a height not greater than 100 m (328 ft) above the surface. Quite apart from the obvious hazard as speeds drew nearer to Mach 1, such a height imposed limitations on the new generation of jets, which achieved their best speed at height. Col Everest's record was thus the last absolute speed record set under the old rule, specifying a 3 km course at restricted height. The availability of highly accurate new recording equipment enabled Col Hanes to make his attempt in two runs in opposite directions over the newly-specified 15 to 25 km course, at any height, with strict safeguards to prevent gain of speed by diving. The result was the first supersonic record.

Col Hanes' F-100C on the ramp near North American's flight test hangar in the desert near Palmdale, California



(UK)

FAIREY DELTA 2

First flight 6 October 1954

Single-seat research aircraft

Power plant: One Rolls-Royce Avon RA.28 turbojet engine (4,763 kg; 10,500 lb st)

Wing span: 8.18 m (26 ft 10 in)

Length: 15.74 m (51 ft 7½ in)

Height: 3.35 m (11 ft 0 in)

Wing area: 33.45 m² (360.00 sq ft)

Weight empty:

T-O weight: 6,078 kg (13,400 lb)

Max level speed: 1,032 knots (1,912 km/h; 1,188 mph)
at 10,975 m (36,000 ft)

Max range: 721 nm (1,336 km; 830 miles)

Record for absolute speed:

10 Mar 1956

L. Peter Twiss Ford/Chichester 983.160 knots
(1,822.000 km/h; 1,132.136 mph)

Since the day in October 1947 when Capt Charles Yeager, USAF, had become first to fly at the speed of sound and survive, in the Bell X-1 rocket-powered research aircraft, pilots tended to experience anything from a mild buffeting to a rough ride as they passed Mach 1. The Delta 2 proved that careful design could reduce the effects of flying through the so-called 'sound

barrier' to a mere flicker of the instruments. On the modest power of an Avon without afterburning, it set the first over-1,000 mph speed record, exceeding the previous figure by a margin of 38% that has never been bettered. Fitted later with a scaled-down version of the Concorde's 'ogee' wing, it helped to prove the suitability of the shape for high-speed flight. The Delta 2 was also the first aircraft to have a drooping nose, to improve the pilot's view when landing—a feature adopted later for Concorde.



The Fairey Delta 2 in its 1956 record breaking form. It received subsequently a mauve paint-scheme, and was then converted into the BAC 221 research aircraft with a wing planform resembling that of the Concorde



(USA)

MCDONNELL F-101A VOOODOO



Illustrations show the F-101A flown by Major Drew, carrying the insignia of 'Operation Firewall'

First flight 29 September 1954

Single-seat fighter

Power plant: Two Pratt & Whitney J57-P-13 turbojet engines (each 5,307 kg; 11,700 lb st dry and 6,577 kg; 14,500 lb st with afterburning)

Wing span: 12.09 m (39 ft 8 in)

Length: 20.54 m (67 ft 4³/₄ in)

Height: 5.49 m (18 ft 0 in)

Wing area: 34.19 m² (368.00 sq ft)

Weight empty: 11,919 kg (26,277 lb)

Max T-O weight: 19,050 kg (42,000 lb)

Max level speed: 973 knots (1,802 km/h; 1,120 mph) at 12,190 m (40,000 ft)

Max range: 1,476 nm (2,736 km; 1,700 miles)

Record for absolute speed:

12 Dec 1957

Major Adrian E. Drew 1,048.722 knots (1,943.500 km/h; 1,207.633 mph)

At the time of the Voodoo's introduction into service, it was the heaviest single-seat fighter that had ever flown with the USAF. It was intended originally as an escort fighter to protect formations of B-36 bombers. When this requirement lapsed, it was delivered for tactical duties. Proof of its high performance was given when it retrieved the absolute speed record for America. During two subsequent decades, the only country to challenge US speed supremacy, for two brief periods, has been the Soviet Union.



First flight 31 August 1956

Flight refuelling tanker and transport

Data: KC-135A

Power plant: Four Pratt & Whitney J57-P-59W turbojet engines (each 6,237 kg; 13,750 lb st)

Wing span: 39.88 m (130 ft 10 in)

Length overall: 41.53 m (136 ft 3 in)

Height overall: 11.68 m (38 ft 4 in)

Wing area: 226.03 m² (2,433.00 sq ft)

Operating weight empty: 44,663 kg (98,466 lb)

Max T-O weight: 134,715 kg (297,000 lb)

Average cruising speed: 462 knots (856 km/h; 532 mph) at 9,300-13,700 m (30,000-45,000 ft)

Max rate of climb at S/L: 393 m (1,290 ft)/min

Transfer radius with 3,055 kg (6,734 lb) fuel reserves: 1,000 nm (1,850 km; 1,150 miles)

Record for speed with payload over a 2,000 km closed circuit (C-135B):

***17-18 Apr 1962**

Major V. Hamann and crew 534.754 knots (991.010 km/h; 615.784 mph) with 5,000, 10,000, 15,000, 20,000, 25,000 and 30,000 kg

Record for speed with payload over a 5,000 km closed

circuit (KC-135A):

***17 Sep 1958**

Capt C. E. Gibbs and crew 509.877 knots (944.907 km/h; 587.137 mph) with 1,000, 2,000, 5,000 and 10,000 kg

Record for height with payload (C-135B):

***17 Apr 1962**

Major D. Craw and crew 14,377.74 m (47,171.06 ft) with 15,000, 20,000, 25,000 and 30,000 kg

Records for distance in a straight line (KC-135A, Class C1):

12 Nov 1957

Gen Curtis E. LeMay and crew Westover-Buenos Aires 5,490.842 nm (10,175.670 km; 6,322.856 miles)
8 Apr 1958

Brig Gen W. E. Eubank and crew Tokyo-Lajes 8,883.247 nm (16,462.500 km; 10,229.303 miles)

Record for distance in a closed circuit (KC-135A, Class C1):

17 Sep 1958

Cap C. E. Gibbs and crew Spokane 2,712.540 nm (5,026.900 km; 3,123.565 miles)

**still unbeaten in 1978*

The C-135B used for the April 1962 record flights with 30,000 kg payload



(USA)

GRUMMAN F11F-1F TIGER

First flight 30 July 1954

Single-seat fighter; weight and performance data for G-985-11 with 7,058 kg (15,560 lb) st J79-GE-7 engine



Power plant: One General Electric J79-GE-3A turbojet engine (4,990 kg; 11,000 lb st dry and 6,804 kg; 15,000 lb st with afterburning)

Wing span: 9.64 m (31 ft 7½ in)

Length overall: 14.27 m (46 ft 10 in)

Height overall: 3.87 m (12 ft 8½ in)

Wing area: 23.20 m² (249.72 sq ft)

Max T-O weight: 10,718 kg (23,630 lb)

Max level speed: 1,164 knots (2,156 km/h; 1,340 mph)

Max rate of climb at S/L: 7,000 m (22,965 ft)/min

Service ceiling: 17,985 m (59,000 ft)

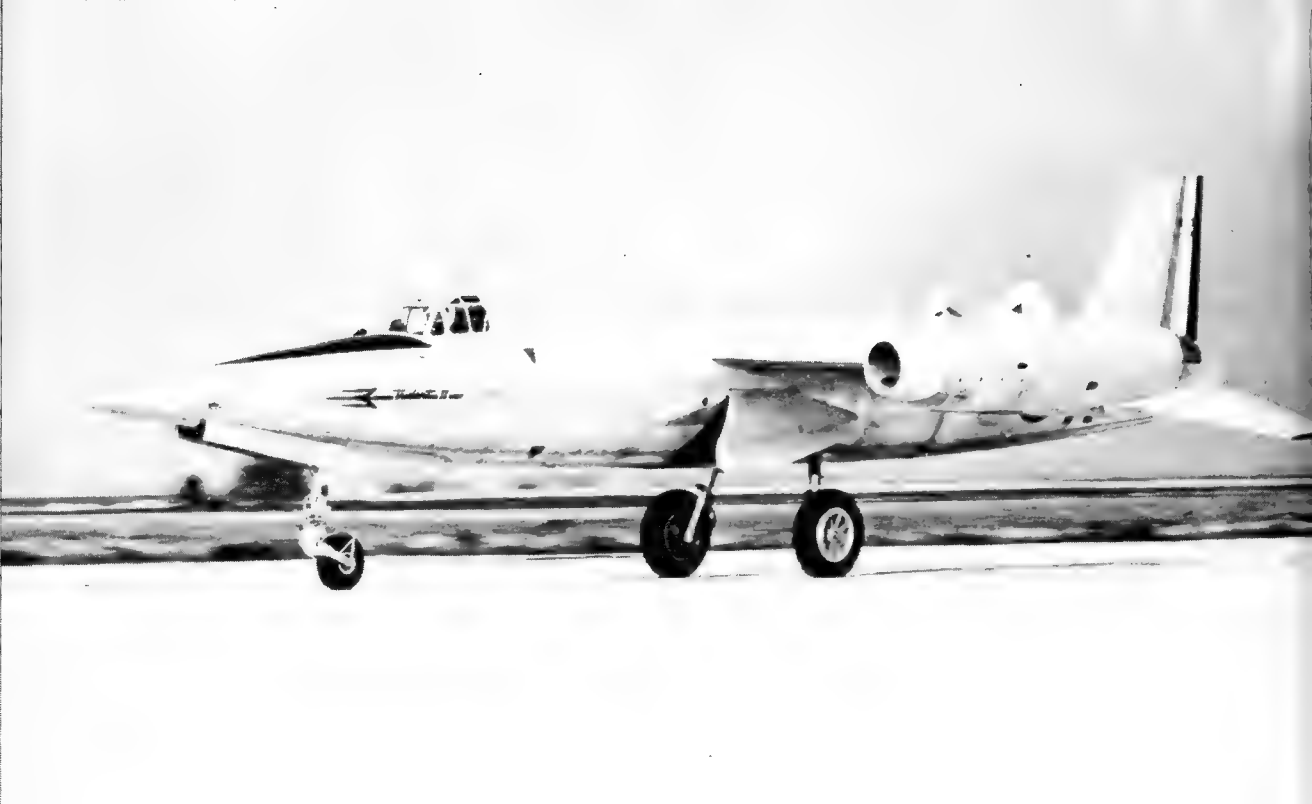
Record for absolute height:

18 Apr 1958

Lt Cdr George C. Watkins 23,449 m (76,932 ft)

The US Navy took delivery of 199 production F11F-1 (later F-11A) Tigers, each powered by a Wright J65-W-18 turbojet rated at 3,380 kg (7,450 lb) st. Six squadrons eventually operated the type, as well as the Navy's Blue Angels aerobatic team; but the J65 proved so troublesome at first that two F11F-1Fs were built with J79 engines as an insurance against complete failure. The engine change boosted maximum speed to Mach 2, and enabled the aircraft to set the height record listed.

No. 138647, the second F11F-1F, used by Lt Cdr George C. Watkins to set an absolute height record



(France)

SUD-OUEST S.O. 9050 TRIDENT II

First flights 2 March 1953 (Trident I) and 19 July 1955 (Trident II)

Single-seat experimental mixed-power interceptor
Data: S.O.9050-003

Power plant: One SEPR 631 twin-barrel rocket motor (3,000 kg; 6,614 lb st) in fuselage; one Turboméca Gabizo turbojet engine (each 1,500 kg; 3,307 lb st with afterburning) at each wingtip

Wing span: 6.978 m (22 ft 10³/₄ in)

Length overall: 12.70 m (41 ft 8 in)

Height: 3.20 m (10 ft 6 in)



Wing area: 14.50 m² (156.08 sq ft)

Weight empty, equipped: 2,625 kg (5,787 lb)

T-O weight: 5,150 kg (11,354 lb)

Max rate of climb at S/L: 6,000 m (19,685 ft)/min

Service ceiling: 25,000 m (82,020 ft)

Records for height (rocket aircraft) and absolute height:

*2 May 1958

R. Carpentier 24,217 m (79,452 ft)

**only record ever set in this class; still unbeaten in 1978*

During the 1950s, several nations became interested in the possibilities offered by the rocket/turbojet mixed power plant formula, to combine cruise economy with very high maximum speed. French experiments centred on the Trident I research aircraft and Trident II lightweight interceptor. The first of two prototypes of the Trident II flew with only the turbojets installed on 19 July 1955, and made its first flight under rocket power on 21 December of the same year. One of the prototypes was lost when its rocket fuels mixed accidentally in the air, on 21 May 1957. Eighteen days earlier, the first of six pre-production Trident IIs had flown. The height record set by one of them took place on the final flight before the programme was cancelled as an economy measure.

S.O. 9050 Trident II



U.S. AIR FORCE

52969

FC 969

(USA)

LOCKHEED F-104A and F-104C STARFIGHTER

First flight 7 February 1954

Single-seat fighter

Data: F-104C

Power plant: One General Electric J79-GE-7 turbojet engine (4,536 kg; 10,000 lb st dry and 7,167 kg;

15,800 lb st with afterburning)

Wing span: 6.68 m (21 ft 11 in)

Length: 16.69 m (54 ft 9 in)

Height: 4.11 m (13 ft 6 in)

Wing area: 16.63 m² (179.00 sq ft)

Weight empty:

T-O weight 'clean': 9,298 kg (20,500 lb)

Max level speed: 1,259 knots (2,333 km/h; 1,450 mph) at 12,190 m (40,000 ft)

Max rate of climb at S/L: 12,190 m (40,000 ft)/min

Service ceiling: 16,765 m (55,000 ft)

Record for absolute speed:

16 May 1958

Capt Walter W. Irwin (YF-104A) Edwards 1,219.258 knots (2,259.538 km/h; 1,404.009 mph)

Records for absolute height:

7 May 1958

Major H. C. Johnson (YF-104A) Edwards 27,811 m (91,243 ft)

14 Dec 1959

Capt Joseph B. Jordan (F-104C) Edwards 31,515 m (103,396 ft)

Lockheed's stub-winged 'missile with a man in it' may have proved a controversial fighter in certain respects, but nobody could ever dispute its outstanding performance. First combat aircraft able to sustain speeds above Mach 2, it became also the first aeroplane ever to hold the absolute speed and height records simultaneously. The pilots who set these records in pre-series YF-104As, in May 1958, belonged to the 83rd Fighter-Interceptor Squadron, first to fly the production F-104A. Next to fall to the Starfighter were seven time-to-height records, claimed by an F-104A which reached 3,000 m (9,845 ft) in 41.85 sec and 25,000 m (82,020 ft) in 4 min 26.03 sec. An F-104C zoom-climbed to the first over-100,000 ft height record in 1959. Jacqueline Cochran then entered the scene. Piloting a TF-104G two-seater, she first recorded 1,106.29 knots (2,048.85 km/h; 1,273.10 mph) over 15/25 km on 12 April 1963; then 1,045.97 knots (1,937.14 km/h; 1,203.68 mph) over a 100 km closed circuit, on 1 May. Next month, Jacqueline Auriol took the 100 km record for France. In reply, Jackie Cochran switched to a single-seat F-104G and averaged 1,242.027 knots (2,300.235 km/h; 1,429.300 mph) over 15/25 km on 11 May 1964; 1,132.433 knots (2,097.266 km/h; 1,303.180 mph) over a 100 km closed circuit on 1 June; and 979.680 knots (1,814.367 km/h; 1,127.395 mph) over a 500 km circuit on 3 June.

On 24 October 1977, at Tonopah, Nevada, Darryl Greenamyer took his specially prepared F-104RB to 858.774 knots (1,590.45 km/h; 988.26 mph) over a 3 km course at restricted altitude. The aircraft was subsequently destroyed.



(USA)

First flight 15 April 1952

Long range strategic bomber

Data: B-52H

Power plant: Eight Pratt & Whitney TF33-P-3 turbofan engines (each 7,711 kg; 17,000 lb st)

Wing span: 56.39 m (185 ft 0 in)

Length overall: 48.03 m (157 ft 7 in)

Height overall: 12.395 m (40 ft 8 in)

Wing area: 371.61 m² (4,000.00 sq ft)

Weight empty: 87,543 kg (193,000 lb)

Max T-O weight: 229,064 kg (505,000 lb)

Max level speed: approx 547 knots (1,014 km/h; 630 mph)

Service ceiling: 16,765 m (55,000 ft)

Max range: 10,855 nm (20,120 km; 12,500 miles)

Record for speed over a 5,000 km closed circuit (B-52D):

*16 Sep 1958

Capt C. Griswold and crew 519.028 knots
(961.867 km/h; 597.675 mph)

Record for speed over a 10,000 km closed circuit (B-52D):

The three B-52Bs which made the first non-stop round-the-world jet flight, at March Air Force Base, California, on 18 January 1957

BOEING B-52 STRATOFORTRESS

26 Sep 1958

Lt Col V. L. Sandaez and crew 486.923 knots
(902.369 km/h; 560.705 mph)

Absolute record for distance in a straight line (B-52H):

*10-11 Jan 1962

Major Clyde P. Evely and crew Okinawa-Madrid 10,883.174 nm (20,168.780 km; 12,532.274 miles)

Absolute record for distance in a closed circuit (B-52H):

*6-7 Jun 1962

Capt William M. Stevenson and crew 9,845.120 nm
(18,245.050 km; 11,336.926 miles)

**still unbeaten in 1978*

'Big stick' of the USAF's Strategic Air Command for more than twenty years, the Stratofortress can claim many distinctions in addition to the four primary records listed above. For example, three B-52Bs made a non-stop round-the-world flight in 45 hr 19 min on 16-18 January 1957, refuelling in flight only three times en route. Earlier, on 21 May 1956, a B-52B had been first to air-drop a hydrogen bomb, over Bikini Atoll.



First flight 4 July 1957

Passenger-carrying transport

Data: initial production version

Power plant: Four Ivchenko AI-20 turboprop engines (each 4,000 ehp)

Wing span: 37.40 m (122 ft 8½ in)

Length overall: 35.90 m (117 ft 9½ in)

Height overall: 10.17 m (33 ft 4½ in)

Wing area: 140.00 m² (1,506.95 sq ft)

Weight empty: 28,000 kg (61,730 lb)

Max T-O weight: 61,500 kg (135,585 lb)

Max cruising speed: 351 knots (650 km/h; 404 mph) at 9,000 m (29,525 ft)

Service ceiling: 12,500 m (41,000 ft)

Range: 1,996 nm (3,700 km; 2,299 miles)

Record for speed over a 100 km closed circuit:

*6 May 1968

B. Konstantinov and crew 380.961 knots
(706.000 km/h; 438.687 mph)

Record for speed over a 5,000 km closed circuit (women):

*12 Jun 1969

L. Ulanova and crew 378.300 knots (701.068 km/h; 435.623 mph)

Record for distance in a straight line (women):

*14-15 Oct 1967

L. Ulanova and crew 4,134.426 nm (7,661.949 km; 4,760.905 miles)

Record for distance in a closed circuit (women):

*18-19 Jun 1969

L. Ulanova and crew 4,329.333 nm (8,023.153 km; 4,985.347 miles)

Record for altitude (women):

*20 Oct 1967

L. Ulanova and crew 13,513 m (44,334 ft)

Record for height in horizontal flight (women):

*13 Jun 1969

L. Ulanova and crew 12,900 m (42,323 ft)

Records for height with payload:

*15 Nov 1958

Vladimir Kokkinaki and crew 13,154 m (43,156 ft) with 10,000 kg

*14 Nov 1958

Vladimir Kokkinaki and crew 12,471 m (40,915 ft) with 15,000 kg

*25 Nov 1959

Vladimir Kokkinaki and crew 12,118 m (39,757 ft) with 20,000 kg

**still unbeaten in 1978*



(UK)

FAIREY ROTODYNE

First flight 6 November 1957

Passenger-carrying convertiplane



Above: Sqn Ldr W.R. Gellatly at the controls of the Rotodyne

Rotor diameter: 27.43 m (90 ft 0 in)

Wing span: 14.17 m (46 ft 6 in)

Fuselage length: 17.88 m (58 ft 8 in)

Height overall: 6.76 m (22 ft 2 in)

Weight empty:

Max T-O weight: 17,237 kg (38,000 lb)

Max cruising speed: 161 knots (298 km/h; 185 mph) at 1,525 m (5,000 ft)

Max range: 391 nm (724 km; 450 miles)

Record for speed over a 100 km closed circuit (convertiplanes):

***5 Jan 1959**

Sqn Ldr W. R. Gellatly 165.777 knots (307.220 km/h; 190.897 mph)

**was at the time also an absolute speed record for any kind of rotorcraft*

The Rotodyne was unique, being a 40-passenger VTOL transport with an overall performance capability that cannot be matched by anything flying in the 'seventies. It took off as a helicopter, its rotor turned by pressure-jets at the blade-tips. At a safe height it converted into an autogyro, with the rotor autorotating, the wings providing much of the lift, and the turboprops providing forward thrust for high speed. The Rotodyne's record has never been beaten in FAI Class E-2 for convertiplanes. Despite airline interest, the entire programme was cancelled in 1962 for economic reasons. Noise from the pressure-jets also brought protests from early environmentalists.



(USSR)

SUKHOI 'T-431' (Su-9/Su-11)

First flight 1955 (?)

Single-seat fighter

Data: Su-11 (estimated)

Power plant: One Lyulka AL-7F turbojet engine
(7,000 kg; 15,432 lb st dry and 10,000 kg; 22,046 lb st
with afterburning)

Wing span: 8.43 m (27 ft 8 in)

Length overall, incl probe: 17.00 m (55 ft 9¼ in)

Height overall: 4.90 m (16 ft 1 in)

Wing area: 25.00 m² (269.10 sq ft)

Weight empty: 9,000 kg (19,840 lb)

Max T-O weight: 13,600 kg (30,000 lb)

Max level speed: 1,033 knots (1,915 km/h; 1,190 mph)
at 11,000 m (36,100 ft)

Service ceiling: 17,000 m (55,700 ft)

Record for speed over a 500 km closed circuit (Su-11):

25 Sep 1962

Anatoly Koznov 1,261.062 knots (2,337.000 km/h;

1,452.142 mph)

Record for absolute height (Su-9):

14 Jul 1959

Major Vladimir Ilyushin 28,852 m (94,659 ft)

Record for height in horizontal flight (Su-11):

4 Sep 1962

Major Vladimir Ilyushin 21,170 m (69,456 ft)

The precise identity of the aircraft known to the Soviet authorities as the T-431 has never been confirmed. However, Vladimir Ilyushin (son of the late design bureau chief Sergei Ilyushin) is known to have served as a Sukhoi test pilot for many years. As the above records were contemporary with many set by the MiG-21, it is reasonable to assume that they were set by the MiG-21's Sukhoi contemporary, the Su-9/11. Thrust quoted for the engine of each aircraft implies that the 1959 record was set by an Su-9, the others by an Su-11.

A standard Su-9 of the Soviet Air Force. This is believed to be the type of aircraft flown by Major Ilyushin when setting his 1959 height record





First flight 30 October 1957

Heavy transport helicopter

Power plant: Two Soloviev D-25 turboshaft engines (each 4,700 shp)

Main rotor diameter: 35.00 m (114 ft 10 in)

Length of fuselage: 33.18 m (108 ft 10½ in)

Height overall: 9.86 m (32 ft 4 in)

Main rotor disc area: 962.11 m² (10,356.09 sq ft)

Weight empty: 18,600 kg (41,000 lb)

Max T-O weight: 42,500 kg (93,700 lb)

Max cruising speed: 135 knots (250 km/h; 155 mph)

Service ceiling: 4,400 m (14,435 ft)

Max range with 12,000 kg (26,450 lb) payload and reserves: 108 nm (200 km; 124 miles)

Record for speed over a 15-25 km course (helicopters):

21 Sep 1961

N. Leshin 172.674 knots (320.000 km/h; 198.838 mph)

Records for speed over a 100 km closed circuit (helicopters):

21 Nov 1959

N. Leshin and B. Zemskov 145.111 knots

(268.920 km/h; 167.099 mph)

*26 Aug 1964

More than 850 Mi-6s are thought to have been built. Except for flying crane duties, stub wings are fitted to offload the rotor in cruising flight



Boris Galitsky and crew of 5 183.547 knots
(340.150 km/h; 211.359 mph)

Record for speed over a 500 km closed circuit (helicopters):

15 Sep 1962

Boris Galitsky 170.330 knots (315.657 km/h;
196.140 mph)

Records for speed with payload over a 1,000 km closed circuit (helicopters):

*11 Sep 1962

Vasily Kolochenko and crew of 4 153.439 knots
(284.354 km/h; 176.689 mph) with 5,000 kg

*15 Sep 1962

Boris Galitsky 162.085 knots (300.377 km/h;
186.645 mph) with 1,000 and 2,000 kg

Records for height with payload (helicopters):

16 Apr 1959

S. Brovtsev and P. Chichov 5,584 m (18,320 ft) with
5,000 kg

For specialised flying crane operations, the Mil design bureau evolved the stalky Mi-10 (opposite) from the Mi-6. Above the line of the cabin windows the two helicopters are almost identical, except for the absence of stub wings on the Mi-10. The depth of the fuselage is reduced considerably on the Mi-10, and the tailboom is deepened so that the flattened undersurface runs unbroken to the tail. Loads are carried between the stalky legs or on a sling. The Mi-10 and similar but short-legged Mi-10K have themselves set many records, carrying payloads of up to 25,105 kg

16 Apr 1959

R. Kaprelyan and N. Leshin 4,885 m (16,027 ft) with
10,000 kg

13 Sep 1961

R. Kaprelyan 2,738 m (8,983 ft) with 15,000 kg

26 May 1965

Vasily Kolochenko 7,151 m (23,461 ft) with 5,000 kg

28 May 1965

G. Alferov 2,840 m (9,317 ft) with 15,000, 20,000 and
25,000 kg

Records for payload to height (helicopters):

30 Oct 1957

R. Kaprelyan 12,004 kg (26,464 lb) to 2,000 m

13 Sep 1961

R. Kaprelyan 20,117 kg (44,350 lb) to 2,000 m

28 May 1965

G. Alferov 25,105 kg (55,347 lb) to 2,000 m

**still unbeaten in 1978*

The Mi-6 was the largest helicopter in the world when its existence was first made public in the Autumn of 1957, at the time of the 50th anniversary of the October Revolution. The Tu-114 (page 168) was announced simultaneously, as the world's biggest transport aircraft.



(USSR)

MYASISHCHEV '201-M' (M-4)

First flight 1953

Long range bomber/flight refuelling tanker

Data: M-4 Bison-C (estimated)

Power plant: Four 'D-15' turbojet engines (each 13,000 kg; 28,660 lb st)

Wing span: 52.00 m (170 ft 7¼ in)



Illustrations show the 201-M exhibited at the Soviet Aviation Day display, Domodedovo Airport, Moscow, in 1967

Length overall: 52.00 m (170 ft 7¼ in)

Wing area: 300.00 m² (3,229.17 sq ft)

Max T-O weight: 165,000 kg (363,760 lb)

Max level speed: 540 knots (1,000 km/h; 621 mph) at 11,000 m (36,100 ft)

Service ceiling: 15,600 m (51,180 ft)

Typical range: 2,700 nm (5,000 km; 3,100 miles)

Records for height with payload:

16 Sep 1959

Nikolai Gorianov and Anatoly Lipko 15,317 m (50,253 ft) with 10,000 kg

29 Oct 1959

Boris Stepanov and Boris Yumashchev 13,121 m (43,048 ft) with 35,000, 40,000, 45,000, 50,000 and 55,000 kg

Record for payload to height:

16 Sep 1959

Nikolai Gorianov and Anatoly Lipko 55,220 kg (121,480 lb) to 2,000 m (6,560 ft)

The very high short-life power of Soviet military turbojets has made possible many impressive records during the past two decades. Typical were the speed with payload and height with payload records set by experimental models of Myasishchev's M-4 bomber/tanker. Production was limited, as the four-turboprop Tupolev Tu-95 Bear proved to be as fast as the M-4 and had a much better range.



(USSR)

First flight 1955

Single-seat fighter; modified MiG-21F (E-66 and E-66A)
and
MiG-21MF (E-66B)

Power plant: One Tumansky 'R37F' (R-11) turbojet engine (6,000 kg; 13,228 lb st); E-66A fitted additionally with GRD U2 auxiliary rocket motor (3,000 kg; 6,614 lb st)

Wing span: 7.15 m (23 ft 5½ in)

Length overall, excl probe: 13.46 m (44 ft 2 in)

Height overall: 4.50 m (14 ft 9¼ in)

Wing area : 23.00 m² (247.57 sq ft)

Normal T-O weight: approx 7,575 kg (16,700 lb)

Max level speed: approx 1,147 knots (2,125 km/h; 1,320 mph) at 11,000 m (36,100 ft)

Combat radius 'clean': 324 nm (600 km; 375 miles)

Record for absolute speed (E-66):

31 Oct 1959

Col Georgii Mossolov 1,288.581 knots
(2,388.000 km/h; 1,483.831 mph)

Record for speed over a 100 km closed circuit (E-66):

A participant in the 1961 Aviation Day display at Tushino Airport, Moscow, was the E-66A (opposite), with added liquid-propellant rocket motor, for true rocket-like climb. The E-66B appears to have used two assisted take-off rockets for a similar purpose

MIKOYAN 'E-66' and 'E-66A' (MiG-21)

16 Sep 1960

Konstantin Kokkinaki 1,159.428 knots (2,148.660 km/h; 1,335.113 mph)

Record for absolute height (E-66A):

28 Apr 1961

Col Georgii Mossolov 34,714 m (113,891 ft)

Records for time to height (women), E-66B:

*15 Nov 1974

Svetlana Savitskaia 3,000 m in 41.2 sec; 6,000 m in 1 min 0.1 sec; 9,000 m in 1 min 21.0 sec; 12,000 m in 1 min 59.3 sec

**still unbeaten in 1978; power plant quoted as one 'PDM' of 7,000 kg; 15,432 lb st and two 'TTPD' each of 2,300 kg; 5,070 lb st*

Col Mossolov's record was the first absolute speed record ever held by the Soviet Union. The auxiliary rocket motor fitted to the E-66A was for research only, and has never been a feature of production MiG-21s—now the most widely used fighters in the world, with more than 30 air forces.



(USA)

First flight 27 May 1958

Two-seat fighter

Data: F-4B

Power plant: Two General Electric J79 GE-8 turbojet engines (each 4,945 kg; 10,900 lb st dry and 7,711 kg; 17,000 lb st with afterburning)

Wing span: 11.71 m (38 ft 5 in)

Length overall: 17.75 m (58 ft 3 in)

Height overall: 4.95 m (16 ft 3 in)

Wing area: 49.24 m² (530.00 sq ft)

Weight empty: 12,700 kg (28,000 lb)

T-O weight 'clean': 20,865 kg (46,000 lb)

Max T-O weight: 24,765 kg (54,600 lb)

Max level speed: 1,290 knots (2,390 km/h; 1,485 mph) at 14,600 m (48,000 ft)

Service ceiling: 18,900 m (62,000 ft)

Combat radius as interceptor: 780 nm (1,450 km; 900 miles)

Record for absolute speed (F4H-1F):

22 Nov 1961

Lt Col Robert B. Robinson Edwards AFB 1,396.017 knots (2,585.425 km/h; 1,606.508 mph)

Because of the difficulty of maintaining supersonic speed at the low level (max 100 m; 328 ft) required by the FAI regulations governing 3 km record attempts, the record set by Hardisty and De Esch in the F4H-1F *Sageburner* stood for 16 years. It then passed to Darryl Greenamyer (page 147), who averaged 858.77 knots (1,590.45 km/h; 988.26 mph) in an F-104 built up privately from surplus components bought all over the world

MCDONNELL F4H-1 (F-4) PHANTOM II

Record for speed over a 100 km closed circuit (F-4B):

25 Sep 1960

Cdr John F. Davis 1,208.06 knots (2,237.32 km/h; 1,390.21 mph)

Record for speed over a 500 km closed circuit (F-4B):

5 Sep 1960

Lt Col T. H. Miller 1,057.35 knots (1,958.21 km/h; 1,216.78 mph)

Record for speed at low altitude (F4H 1F):

28 Aug 1961

Lt H. Hardisty and Lt E. De Esch 783.926 knots (1,452.777 km/h; 902.712 mph)

Record for absolute height (F-4B):

6 Dec 1959

Cdr L. E. Flint 30,040 m (98,556 ft)

Record for height in horizontal flight:

8 Dec 1961

Cdr George W. Ellis Edwards AFB 20,252 m (66,444 ft)



(USA)

CONVAIR F-106A DELTA DART



These two illustrations show Major Joseph Rogers with the F-106A before his record flight

First flight 26 December 1956

Single-seat fighter

Power plant: One Pratt & Whitney J75-P-17 turbojet engine (7,802 kg; 17,200 lb st dry and 11,113 kg; 24,500 lb st with afterburning)

Wing span: 11.67 m (38 ft 3½ in)

Length overall, incl probe: 21.56 m (70 ft 8¾ in)

Height overall: 6.18 m (20 ft 3⅓ in)

Wing area: 61.46 m² (661.50 sq ft)

Weight empty: approx 11,793 kg (26,000 lb)

T-O weight clean: 15,876 kg (35,000 lb)

Max stabilised level speed: 1,090 knots (2,020 km/h; 1,255 mph) at 12,190 m (40,000 ft)

Service ceiling: 17,375 m (57,000 ft)

Combat radius: 499 nm (925 km; 575 miles)

Record for absolute speed:

15 Dec 1959

Major Joseph W. Rogers Edwards AFB 1,325.165 knots (2,455.772 km/h; 1,525.950 mph)

Despite their age, a total of 341 of these delta-wing interceptors continued to provide the entire home defence fighter force of USAF Aerospace Defense Command in 1978. The record set by Major Rogers represented one more round in the battle for speed supremacy waged between the USA and Soviet Union between 1958 and 1965.



First flight 3 October 1957

Passenger-carrying transport

Power plant: Four Kuznetsov NK-12MV turboprop engines (each 14,795 ehp)

Wing span: 51.10 m (167 ft 8 in)

Length overall: 54.10 m (177 ft 6 in)

Height overall: 15.50 m (50 ft 10¼ in)

Wing area: 311.10 m² (3,348.65 sq ft)

Weight empty: 91,000 kg (200,620 lb)

Max T-O weight: 171,000 kg (376,990 lb)

Max cruising speed: 415 knots (770 km/h; 478 mph) at 9,000 m (29,500 ft)

Service ceiling: 12,000 m (39,375 ft)

Max range: 4,829 nm (8,950 km; 5,561 miles)

Records for speed over a 1,000 km closed circuit (turboprop-powered aircraft):

****24 Mar 1960**

I. Soukhomline and crew 470.201 knots (871.380 km/h; 541.449 mph)

Records for speed over a 2,000 km closed circuit (turboprop-powered aircraft):

****1 Apr 1960**

I. Soukhomline and crew 462.591 knots (857.277 km/h; 532.686 mph)

Tu-114 prototype, the probable vehicle for early record attempts

Records for speed over a 5,000 km closed circuit (turboprop-powered aircraft):

****9 Apr 1960**

I. Soukhomline and crew 473.348 knots (877.212 km/h; 545.073 mph)

Records for speed over a 10,000 km closed circuit (turboprop-powered aircraft):

***21 Apr 1962**

I. Soukhomline and crew 397.879 knots (737.352 km/h; 458.168 mph)

Record for height with payload:

12 Jul 1961

12,073 m (39,610 ft) with 25,000 and 30,000 kg

**qualifying also for speed with payloads of 1,000, 2,000, 5,000 and 10,000 kg*

***qualifying also for speed with payloads of 1,000, 2,000, 5,000, 10,000, 15,000, 20,000 and 25,000 kg*

Until the Soviet Union proved differently, it was always assumed that reliance on propellers limited the maximum speed of turboprop aircraft to around 370 knots (685 km/h; 425 mph). It was, therefore, quite a shock to learn that the Tu-114—world's largest airliner until the advent of the Boeing 747—had not only flown at 473 knots (877 km/h; 545 mph) around a 5,000 km closed circuit, but had carried a 25 ton payload while doing so. It left little doubt of the capability of the Tu-95 bomber from which this transport had been developed.



First flight 11 November 1956

Tactical bomber

Power plant: Four General Electric J79-GE-5B turbojet engines (each 4,672 kg; 10,300 lb st dry and 7,076 kg; 15,600 lb st with afterburning)

Wing span: 17.32 m (56 ft 10 in)

Length: 29.49 m (96 ft 9 in)

Height overall: 9.58 m (31 ft 5 in)

Wing area: 143.26 m² (1,542.00 sq ft)

Weight empty (without pod): 25,201 kg (55,560 lb)

Design T-O weight (with pod): 73,935 kg (163,000 lb)

Max level speed: 1,147 knots (2,125 km/h; 1,320 mph) at 12,190 m (40,000 ft)

Max rate of climb at S/L: over 5,182 m (17,000 ft)/min

Combat ceiling: over 19,200 m (63,000 ft)

Max unrefuelled range: 4,450 nm (8,247 km; 5,124 miles)

Records for speed over a 1,000 km closed circuit:

*14 Jan 1961

Major Harold E. Confer 1,115.685 knots
(2,067.567 km/h; 1,284.730 mph)

Sustained speed for 30 min:

10 May 1961

Major Elmer E. Murphy and crew of 2 Edwards AFB
1,130.745 knots (2,095.476 km/h; 1,302.072 mph)

En route to the 1961 Paris Air Show, a B-58A flew non-stop 3,188 nm (5,905 km; 3,669 miles) from New York to Paris in 3 hr 19 min 41 sec.

Records for speed over a 2,000 km closed circuit:

12 Jan 1961

Major H. Deutschendorf 922.088 knots
(1,708.820 km/h; 1,061.809 mph)

Records for height with payload:

**18 Sep 1962

Major F. Fulton 26,017.93 m (85,360.67 ft) with
5,000 kg

*qualifying also for speed with payloads of 1,000 and
2,000 kg

**qualifying also for height with 2,000 kg

America's first supersonic bomber, the Hustler was unique on many counts. It carried its offensive weapons in a jettisonable fuel/payload pod under its belly. Defensive weapons were limited to a remotely controlled multi-barrel 'Gatling' gun in the tail. The airframe of each production aircraft cost more than its weight in gold. During flight trials, B-58s attained speeds of up to Mach 2.09 and flew continuously at supersonic speed for up to 1½ hr. Low-level capabilities were demonstrated with a 1,215 nm (2,250 km; 1,400 mile) flight from Fort Worth, Texas, to Edwards Air Force Base, California, at nearly 610 knots (1,125 km/h; 700 mph), while never exceeding 500 ft (150 m) above the terrain. The 14 January record gained the Thompson Trophy for 1961. The 10 May flight gained the Aéro-Club de France Blériot Trophy offered 30 years earlier for the first pilot able to average 2,000 km/h for 30 min.





Above: Al Averill and the record-setting Bell 47G. Opposite: Capt Robert Wagner, Major H.J. Deutschendorf and Capt W.L. Polhemus, crew of the B-58 which set a 2,000 km closed-circuit speed record in 1961 (see previous page)

First flight 1953

Three-seat general utility helicopter

Power plant: One Franklin O-335 (6V4-200-C33) flat-six piston engine (200 hp)

Main rotor diameter: 10.71 m (35 ft 1½ in)

Length of fuselage: 8.33 m (27 ft 4 in)

Height overall: 2.83 m (9 ft 3½ in)

Main rotor disc area: 90.02 m² (969.00 sq ft)

Weight empty: 651 kg (1,435 lb)

T-O weight: 1,000 kg (2,204.5 lb)

Max level speed: 75 knots (138 km/h; 86 mph)

Max rate of climb at S/L: 238 m (780 ft)/min

Service ceiling: 3,322 m (10,900 ft)

Range: 184 nm (341 km; 212 miles)

Record for distance in a straight line (helicopters, Class E1b):

*8 Feb 1961

Al P. Averill El Paso-Texarkana 635.002 nm
(1,176.790 km; 731.222 miles)

**still unbeaten in 1978*

Despite the longevity of Al Averill's distance record, the 'record' for which the Bell 47 is best remembered is, probably, that it was the first aircraft to be awarded a US helicopter Approved Type Certificate, on 8 March 1946, after which it remained in continuous production in the USA and abroad for thirty years.



First flight 1959 (?)

Anti-submarine flying-boat

Power plant: Two Lyulka AL-7RV turbojet engines (each 6,500 kg; 14,330 lb st)

Wing span: 22.30 m (73 ft 2 in)

Length overall: 31.10 m (102 ft 0½ in)

Wing area: 111.80 m² (1,203.40 sq ft)

Weight empty: 24,100 kg (53,131 lb)

T-O weight: 41,000 kg (90,390 lb)

Max level speed: 491 knots (910 km/h; 565 mph) at 1,500 m (4,925 ft)

Range: 2,590 nm (4,800 km; 2,982 miles)

Record for speed over a 15-25 km course (seaplanes, unrestricted altitude):

****7 Aug 1961**

Nikolai Andrievsky and crew of 2 492.120 knots (912.000 km/h; 566.689 mph)

Record for speed over a 1,000 km closed circuit (seaplanes):

*** **3 Sep 1961**

Georgii Buryanov and crew of 2 472.618 knots (875.860 km/h; 544.233 mph)

Record for height (seaplanes):

****9 Sep 1961**

Georgii Buryanov and crew of 2 14,962 m (49,088 ft)

Records for height with payload (seaplanes):

****8 Sep 1961**

Georgii Buryanov and crew of 2 14,062 m (46,135 ft) with 1,000, 2,000 and 5,000 kg

****11 Sep 1961**

Georgii Buryanov and crew of 2 12,733 m (41,775 ft) with 10,000 kg

****12 Sep 1961**

Georgii Buryanov and crew of 2 11,997 m (39,360 ft) with 15,000 kg

Record for payload to height (seaplanes):

****12 Sep 1961**

Georgii Buryanov and crew of 2 15,206 kg (33,523 lb) to 2,000 m

**qualifying also for speed with payloads of 1,000, 2,000 and 5,000 kg*

****still unbeaten in 1978**

Heaviest and fastest flying-boat of its day, the M-10 (known to NATO as Mallow) remains the only pure-jet flying-boat ever to have entered military service. Production appears to have been limited to a pre-series batch, after which interest switched to the turboprop M-12 (page 207); but the M-10 continues to hold all twelve records listed in its Class.



The Vintokryl's Soloviev turboshaft engines were able to drive its rotors for vertical take-off. In cruising flight, they drove forward-facing propellers, leaving the rotors free to autorotate. Like its British counterpart, the Rotodyne, the Vintokryl remained but an impressive prototype

(USSR)

KAMOV Ka-22 VINTOKRYL

First flight 1961

Experimental convertiplane

Power plant: Two Soloviev D-25V turboshaft engines (each 5,622 shp)

Rotor diameter (each): 20.00 m (65 ft 7½ in)

Wing span: 20.45 m (67 ft 1 in)

Length overall: 22.90 m (75 ft 1½ in)

Height overall: 8.24 m (27 ft 0½ in)



Rotor disc area (each): 314.16 m² (3,381.59 sq ft)

T-O weight: 33,700 kg (74,295 lb)

Max level speed: 203 knots (377 km/h; 234 mph)

Record for speed over a 15-25 km course (convertiplanes):

*7 Oct 1961

D. K. Efremov and V. V. Gromov Joukovski-Petrovskoe 192.261 knots (356.300 km/h; 221.394 mph)

Record for height (convertiplanes):

** *24 Nov 1961

D. K. Efremov and V. V. Gromov Bykovo 2,588 m (8,491 ft)

Record for payload to height (convertiplanes):

*24 Nov 1961

D. K. Efremov and V. V. Gromov Bykovo 16,485 kg (36,343 lb) to 2,000 m

***qualifying also as records for height with payloads of 1,000, 2,000, 5,000, 10,000 and 15,000 kg*

**still unbeaten in 1978*

The Soviet Union's counterpart to the Rotodyne (page 153) seems to have been built only for research. Its official records have never been challenged, and only the Rotodyne's twenty year old closed-circuit speed record supplements the Ka-22's eight entries under FAI Class E-2.



(USSR)

MIKOYAN E-166

First flight 1961 (?)

Single-seat experimental aircraft

Data: estimated

Power plant: One Tumansky 'TRD Mk P.166' turbojet engine (10,000 kg; 22,046 lb st dry and 15,000 kg; 33,069 lb st with afterburning)

Wing span: 9.00 m (29 ft 6¼ in)

Length overall: 20.00 m (65 ft 7½ in)

T-O weight: 9,000 kg (19,840 lb)



Absolute record for speed over a 15-25 km course:

7 Jul 1962

Lt Col Georgii Mossolov 1,446.681 knots
(2,681.000 km/h; 1,665.893 mph)

Record for speed over a 100 km closed circuit:

7 Oct 1961

Col Alexander M. Fedotov 1,295.592 knots
(2,401.000 km/h; 1,491.909 mph)

Record for sustained height in horizontal flight:

11 Sep 1962

Pyotr M. Ostapenko 22,670 m (74,377 ft)

When it was announced that the above records had been set by an aeroplane identified only as the E-166, there seemed little doubt that this would prove to be a Mikoyan product. The E-66 designation had been applied to a MiG-21; and Mossolov, Fedotov and Ostapenko had all been associated with earlier records set by MiGs. Expectations were confirmed at the 1967 Aviation Day display at Domodedovo Airport, Moscow, when the E-166 was exhibited and was seen to be a close relative of a twin-engined MiG fighter prototype that NATO had named Flipper. It was produced for high-speed aerodynamic and power plant research.

Two test pilots who have been associated with many of the outstanding record flights by Mikoyan aircraft: Alexander Fedotov (left) and Pyotr Ostapenko



(USA)

NORTH AMERICAN X-15

First flight 8 June 1959

Single-seat hypersonic research aircraft

Data: X-15A-2

Power plant: One Thiokol (Reaction Motors) XLR99-RM-2 single-barrel rocket motor (25,855 kg; 57,000 lb st)



Wing span: 6.81 m (22 ft 4 in)

Length overall: 15.98 m (52 ft 5 in)

Height overall: 4.11 m (13 ft 6 in)

Wing area: 18.58 m² (200.00 sq ft)

Max weight for air launch: 23,095 kg (50,914 lb)

Max landing weight: 7,765 kg (17,120 lb)

Max level speed: 3,937 knots (7,297 km/h; 4,534 mph)

Absolute record for height, for aircraft launched from a carrier aircraft (X-15):

**17 Jul 1962*

Major Robert White Edwards AFB 95,935.99 m
(314,750.63 ft)

**still unbeaten in 1978*

There was considerable scepticism when North American announced, in 1955, that it had been awarded a joint USAF/USN/NASA contract for three manned research aircraft with a design speed of Mach 7 and design ceiling of 80,500 m (264,000 ft). By the time the programme was terminated, in November 1968, after a total of 199 flights, the X-15s had established themselves as, by far, the fastest and highest climbing aircraft ever built. Greatest height achieved, after launch from a B-52 'mother-plane', was 107,960 m (354,200 ft), on 22 August 1963. Highest speed was Mach 6.72 (3,937 knots; 7,297 km/h; 4,534 mph) by Major Pete Knight, USAF, on 3 October 1967. In its final form, a large external fuel tank was added under each side of the fuselage of the X-15A-2 (see opposite page).



(USA)

First flight 24 October 1947

Rescue and general purpose amphibian

Data: HU-16B

Power plant: Two Wright R-1820-76B Cyclone nine-cylinder radial piston engines (each 1,425 hp)

Wing span: 29.46 m (96 ft 8 in)

Length overall: 19.43 m (63 ft 9 in)

Height overall: 7.87 m (25 ft 10 in)

Wing area: 96.15 m² (1,035.00 sq ft)

Weight empty: 10,379 kg (22,883 lb)

Max T-O weight: 14,515 kg (32,000 lb)

Max level speed: 205 knots (380 km/h; 236 mph) at 5,730 m (18,800 ft)

Service ceiling: 7,620 m (25,000 ft)

Range: 2,796 nm (5,182 km; 3,220 miles)

Record for speed over a 1,000 km closed circuit (amphibians, UF-2G):

** *13 Aug 1962

Cdr Wallace C. Dahlgren New York (Floyd Bennett Field) 201.445 knots (373.320 km/h; 231.970 mph)

Record for speed over a 1,000 km closed circuit with 5,000 kg payload (amphibians, HU-16B):

*19 Mar 1963

Capt Glenn A. Higginson Eglin AFB 133.434 knots (247.280 km/h; 153.652 mph)

US Coast Guard UF-2G used for 1962 record flights

GRUMMAN G-64 ALBATROSS

Record for speed over a 5,000 km closed circuit with 1,000 kg payload (amphibians, UF-2G):

*15-16 Sep 1962

Lt Cdr Richard A. Hoffman New York (Floyd Bennett Field) 131.469 knots (243.640 km/h; 151.391 mph)

Record for height (amphibians, HU-16B):

*4 Jul 1973

Lt Col C. H. Manning 10,022.7 m (32,882.9 ft)

Records for height with payload (amphibians):

*12 Sep 1962

Lt Cdr Donald E. Moore (UF-2G) New York (Floyd Bennett Field) 8,984 m (29,475 ft) with 1,000 kg

*12 Sep 1962

Lt Cdr Fred A. W. Franke (UF-2G) New York (Floyd Bennett Field) 8,353 m (27,405 ft) with 2,000 kg

*20 Mar 1963

Capt Henry E. Erwin (HU-16B) Eglin AFB 6,018.89 m (19,747.02 ft) with 5,000 kg

Record for payload to height (amphibians, HU-16B):

*20 Mar 1963

Capt Henry E. Erwin Eglin AFB 5,517 kg (12,163 lb) to 2,000 m

Record for distance in a straight line (amphibians, UF-2G):

*24-25 Oct 1962

Cdr William G. Fenton Kodiak-Pensacola 3,101.671 nm (5,748.040 km; 3,571.660 miles)

**qualifying also for speed with payloads of 1,000 and 2,000 kg

*still unbeaten in 1978



(USA)

BELL UH-1D IROQUOIS



These two photographs are interesting in that they show the same aircraft, as it came off the assembly line (above) and as it had been modified by the time it was used to set a large series of records (opposite). Note especially the completely different tail fin/rotor pylon, and the deletion of drag-producing excrescences such as aerials. Added markings on the side during the record flights were to facilitate timing from the ground

First flight 16 August 1961

General-purpose military helicopter

Power plant: One Lycoming T53-L-11 turboshaft engine (1,100 shp)

Main rotor diameter: 14.63 m (48 ft 0 in)

Length of fuselage: 13.59 m (44 ft 7 in)

Height overall: 4.45 m (14 ft 7 in)

Main rotor disc area: 168.06 m² (1,809.00 sq ft)

Weight empty: 2,139 kg (4,717 lb)

Max T-O weight: 4,309 kg (9,500 lb)

Max level speed: 120 knots (222 km/h; 138 mph) at S/L

Max rate of climb at S/L: 716 m (2,350 ft)/min

Service ceiling: 6,705 m (22,000 ft)

Range with max fuel: 273 nm (507 km; 315 miles)

Record for speed over a 3 km course (helicopters, Class E1e):

**** *16 Nov 1964**

D. P. Wray 150.410 knots (278.741 km/h; 173.201 mph)

Record for speed over a 500 km closed circuit (helicopters, Class E1d):

**** *23 Nov 1964**

B. L. Odneal 154.775 knots (286.830 km/h; 178.228 mph)

Bell UH-1D Iroquois cont.

Record for speed over a 500 km closed circuit (helicopters, Class E1e):

**** *23 Nov 1964**

R. A. Chubboy 149.481 knots (277.020 km/h;
172.132 mph)

Record for speed over a 1,000 km closed circuit (helicopters, Class E1d):

***15 Sep 1964**

J. A. Johnston 126.863 knots (235.103 km/h;
146.086 mph)

Record for speed over a 1,000 km closed circuit (helicopters, Class E1e):

**** *24 Nov 1964**

E. F. Sampson 143.594 knots (266.110 km/h;
165.353 mph)

Record for speed over a 2,000 km closed circuit (helicopters, Class E1e):

***23 Sep 1964**

CWO J. C. Watts 116.352 knots (215.626 km/h;
133.984 mph)

Record for height (helicopters, Class E1d):

**** *11 Dec 1964**

E. F. Sampson 10,713 m (35,148 ft)

Record for distance in a straight line (helicopters, Class E1e):

***27 Sep 1964**

M. N. Antoniou 1,171.321 nm (2,170.700 km;
1,348.808 miles)

Record for distance in a closed circuit (helicopters, Class E1e):

***23 Sep 1964**

CWO J. C. Watts 1,079.289 nm (2,000.146 km;
1,242.831 miles)

****1,400 shp YT53-L-13**

***still unbeaten in 1978**

Typical of the exciting shapes that emerge from Lockheed's top-secret 'Skunk Works' was the YF-12A (see page 189) which held the absolute speed record for 12 years and then lost it only to another version of the same basic design





First flight 26 April 1962

Two-seat interceptor prototype

Power plant: Two Pratt & Whitney JT11D-20B (J58) bypass turbojet (turbo-ramjet) engines (each approx 10,430 kg; 23,000 lb st dry and 14,740 kg; 32,500 lb st with afterburning)

Wing span: 16.94 m (55 ft 7 in)

Length overall: 32.74 m (107 ft 5 in)

Height overall: 5.64 m (18 ft 6 in)

Wing area (nominal): 167.23 m² (1,800.00 sq ft)

Weight empty: approx 27,215 kg (60,000 lb)

Max T-O weight: 68,040-77,110 kg (150,000-170,000 lb)

Max level speed: more than 1,740 knots (3,220 km/h; 2,000 mph)

Service ceiling: above 24,400 m (80,000 ft)

Absolute record for speed over a 15-25 km course:

1 May 1965

Col Robert L. Stephens and Lt Col Daniel

Andre Edwards AFB 1,797.698 knots

(3,331.507 km/h; 2,070.099 mph)

Absolute record for sustained height in horizontal flight:

1 May 1965

Col Robert L. Stephens and Lt Col Daniel

Andre Edwards AFB 24,462.596 m (80,257.863 ft)

All-titanium record-breaker: the YF-12A

Record for speed over a 500 km closed circuit:

1 May 1965

Major Walter F. Daniel and Major Noel T.

Warner Edwards AFB 1,426.834 knots

(2,644.220 km/h; 1,643.041 mph)

Record for speed over a 1,000 km closed circuit:

*1 May 1965

Major Walter F. Daniel and Capt James P.

Cooney Edwards AFB 1,466.650 knots

(2,718.006 km/h; 1,688.889 mph)

**qualifying also for speed with payloads of 1,000 and 2,000 kg*

The story of the YF-12A and its reconnaissance counterpart, the SR-71A (page 253), began on 26 April 1962 with the first flight of an aircraft known as the Lockheed A-11, which had been built in great secrecy in the famous 'Skunk Works' at Burbank from which the U-2 spy-plane had emerged earlier. In 1964, President Johnson admitted the existence of the A-11, which he said had been tested in sustained flight at speeds of more than 1,740 knots (3,220 km/h; 2,000 mph) and at heights in excess of 21,350 m (70,000 ft). It was believed for many years that only three YF-12As had been completed for evaluation as experimental fighters, and that this version of the A-11 had been abandoned in favour of the SR-71A. In fact, it now appears likely that about fifteen A-11/YF-12As were built to equip a squadron that air-launched GTD-21 high-speed drones.



First flight 1955

Fighter-trainer and fighter: modified two-seat MiG-21U Mongol-A (E-33) and single-seat MiG-21PF Fishbed-D (E-76)

Data: standard MiG-21PF

Power plant: One Tumansky R-11 turbojet engine (4,300 kg; 9,480 lb st dry and 5,950 kg; 13,117 lb st with afterburning)

Wing span: 7.15 m (23 ft 5½ in)

Length overall (excl pitot probe): 13.46 m (44 ft 2 in)

Height overall: 4.10 m (13 ft 5½ in)

Wing area: 23.00 m² (247.57 sq ft)

Max T-O weight: approx 9,300 kg (20,503 lb)

Max level speed: approx 1,152 knots (2,135 km/h; 1,325 mph) at 11,000 m (36,100 ft)

Service ceiling: approx 20,000 m (65,620 ft)

Combat radius: approx 302 nm (560 km; 350 miles)

Record for speed over a 100 km closed circuit (women):

*18 Feb 1967

Evgenia Martova (E-76) 1,148.657 knots (2,128.700 km/h; 1,322.710 mph)

Record for speed over a 500 km closed circuit (women):

The two-seat trainer version of the MiG-21 known to NATO as Mongol and, almost certainly, to the Russians as the E-33

*16 Sep 1966

Marina Solovyeva (E-76) 1,112.666 knots (2,062.000 km/h; 1,281.265 mph)

Record for speed over a 1,000 km closed circuit (women):

*28 Mar 1967

Lydia Zaitseva (E-76) 700.494 knots (1,298.160 km/h; 806.638 mph)

Record for speed over a 2,000 km closed circuit (women):

*11 Oct 1966

Evgenia Martova (E-76) 485.789 knots (900.267 km/h; 559.399 mph)

Record for height (women):

*22 May 1965

Natalya Prokhanova (E-33) 24,336 m (79,842 ft)

Record for sustained height in horizontal flight (women):

*23 Jun 1965

Lydia Zaitseva (E-33) 19,020 m (62,402 ft)

**still unbeaten in 1978*

Of the thirteen women's records listed by the FAI under the premier Class C1 for jet-powered landplanes, twelve are held by Soviet pilots. Of these, eleven were set in MiGs, and all but one in variants of the MiG-21.



(USA)

HUGHES OH-6A CAYUSE

First flight 27 February 1963

Light observation helicopter

Power plant: One Allison T63-A-5 turboshaft engine (317 shp, derated to 252.5 shp for T-O and 214.5 shp max continuous)



Picture opposite was taken during one of the speed runs of the record-setting OH-6A No. 24213

Main rotor diameter: 8.03 m (26 ft 4 in)

Length of fuselage: 7.01 m (23 ft 0 in)

Height overall: 2.48 m (8 ft 1½ in)

Main rotor disc area: 50.60 m² (544.63 sq ft)

Weight empty, equipped: 557 kg (1,229 lb)

Design gross weight: 1,090 kg (2,400 lb)

Econ cruising speed: 116 knots (216 km/h; 134 mph)

Service ceiling: 4,815 m (15,800 ft)

Normal range at 1,525 m (5,000 ft): 330 nm (611 km; 380 miles)

Record for speed over a 3 km course (helicopters, Class E1b):

*24 Mar 1966

R. Heard 148.246 knots (274.730 km/h; 170.709 mph)

Record for speed over a 15-25 km course (helicopters, Class E1b):

*24 Mar 1966

R. Heard 149.204 knots (276.506 km/h; 171.813 mph)

Record for speed over a 100 km closed circuit (helicopters, Class E1b):

*13 Mar 1966

A. Darling 140.011 knots (259.470 km/h; 161.227 mph)

Record for speed over a 500 km closed circuit (helicopters, Class E1b):

*13 Mar 1966

A. Darling 137.378 knots (254.590 km/h; 158.195 mph)



U.S. ARMY
24213

= ★ = ARMY

DANGER

Record for speed over a 500 km closed circuit (helicopters, Class E1c):

***12 Mar 1966**

D. M. Kyle 134.819 knots (249.847 km/h; 155.247 mph)

Record for speed over a 1,000 km closed circuit (helicopters, Class E1b):

***13 Mar 1966**

A. Darling 134.772 knots (249.760 km/h; 155.193 mph)

Record for speed over a 1,000 km closed circuit (helicopters, Class E1c):

***12 Mar 1966**

D. M. Kyle 132.948 knots (246.380 km/h; 153.093 mph)

Record for height in horizontal flight (helicopters, Class E1b):

***27 Mar 1966**

J. L. Zimmerman 8,061.3 m (26,447.8 ft)

Record for height in horizontal flight (helicopters, Class E1c):

***27 Mar 1966**

J. L. Zimmerman 5,503 m (18,054 ft)

Record for time to climb to 3,000 m (helicopters, Class E1b):

***27 Mar 1966**

J. L. Zimmerman 4 min 1.5 sec

Record for time to climb to 3,000 m (helicopters, Class E1c):

***27 Mar 1966**

J. L. Zimmerman 5 min 36.2 sec

Record for time to climb to 6,000 m (helicopters, Class E1b):

***27 Mar 1966**

J. L. Zimmerman 7 min 12 sec

Record for distance in a straight line (helicopters, Class E1):

***6-7 Apr 1966**

R. G. Ferry 1,921.830 nm (3,561.550 km; 2,213.040 miles)

Record for distance in a closed circuit (helicopters, Class E1b):

***20 Mar 1966**

J. L. Zimmerman 917.395 nm (1,700.124 km; 1,056.406 miles)

**still unbeaten in 1978*

Record-breakers provide an added attraction at any air show. Hughes and the US Army sponsored display of the OH-6A in Paris



First flight 6 December 1955

Single-seat autogyro

Power plant: One McCulloch 4318G flat-four piston engine (90 hp)

Rotor diameter (standard): 6.10 m (20 ft 0 in)

Length of fuselage: 3.45 m (11 ft 4 in)

Height overall: 1.90 m (6 ft 3 in)

Rotor disc area: 29.17 m² (314.00 sq ft)

Weight empty: 112 kg (247 lb)

Max T-O weight: 227 kg (500 lb)

Max level speed: 74 knots (137 km/h; 85 mph) at S/L

Max rate of climb at S/L: 305 m (1,000 ft)/min

Service ceiling: 3,800 m (12,500 ft)

Normal range: 86 nm (160 km; 100 miles)

Record for speed over a 15-25 km course (rotorplanes, Class E3a):

*15 Jun 1967

Igor Bensen 68.611 knots (127.150 km/h; 79.007 mph)

Record for speed over a 100 km closed circuit (rotorplanes, Class E3a):

*15 May 1967

Igor Bensen 44.593 knots (82.640 km/h; 51.350 mph)

Records for distance in a straight line (rotorplanes, Classes E3 and E3a):

15 May 1967

Igor Bensen 71.875 nm (133.200 km; 82.766 miles)

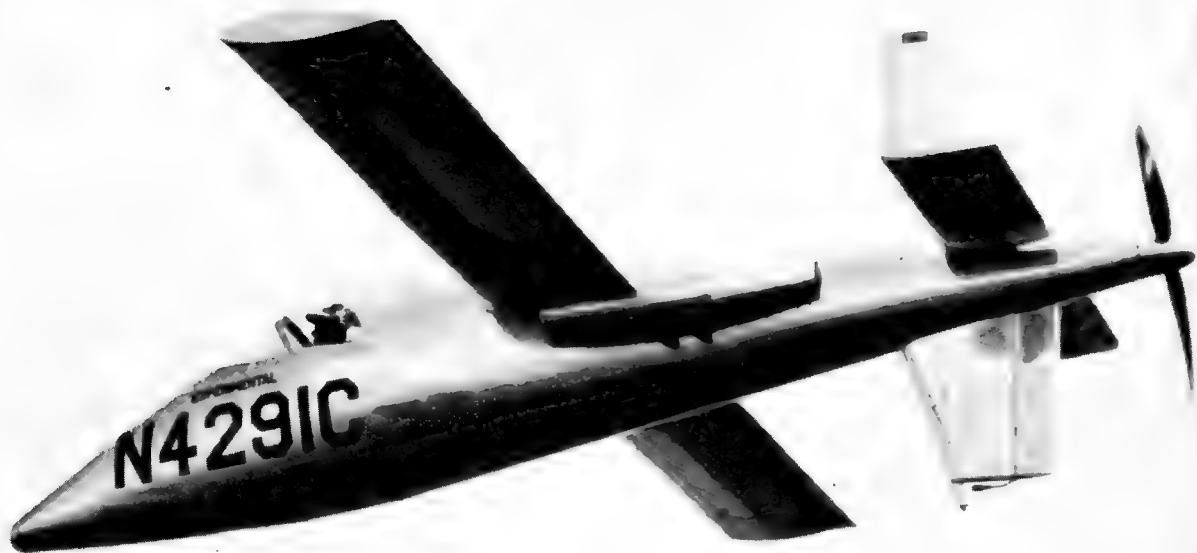
Records for distance in a closed circuit (rotorplanes, Classes E3 and E3a):

*15 May 1967

Igor Bensen 64.526 nm (119.580 km; 74.303 miles)

**still unbeaten in 1978*

During the second World War, the Germans produced a tiny folding rotary-wing kite that could be assembled on the deck of a surfaced submarine and paid out at the end of a line, enabling the pilot to spot for targets 'over the horizon'. After the war, Igor Bensen formed a company to manufacture a more refined Gyro-Glider on the same lines, which would-be pilots could buy ready made or in kit form. It proved so successful that he then added a small engine and pusher propeller, converting the rotor-kite into a powered autogyro known as the Gyro-Copter. This has been produced in many versions, of which the B-8M used to set these records is typical.



First flight 28 April 1965

Single-seat homebuilt monoplane

Power plant: One Continental O-200-A flat-four piston engine (100 hp), driving a pusher propeller

Wing span: 7.26 m (23 ft 10 in)

Length overall: 5.87 m (19 ft 3 in)

Height overall: 1.73 m (5 ft 8 in)

Wing area: 5.57 m² (60.00 sq ft)

Weight empty, equipped: 308 kg (685 lb)

Max T-O weight: 500 kg (1,102 lb)

Cruising speed (70% power): 156 knots (290 km/h; 180 mph)

Range with max fuel: 1,737 nm (3,220 km; 2,000 miles)

Record for speed over a 3 km course (light aircraft, Class C1a):

*29 Sep 1973

Prof Edgar J. Leshar 150.323 knots (278.579 km/h; 173.101 mph)

Record for speed over a 15-25 km course (light aircraft, Class C1a):

*30 Sep 1973

Prof Edgar J. Leshar 146.878 knots (272.195 km/h; 169.134 mph)

Record for speed over a 500 km closed circuit (light aircraft, Class C1a):

*22 May 1967

Prof Edgar J. Leshar 157.656 knots (292.170 km/h; 181.546 mph)

Record for speed over a 1,000 km closed circuit (light aircraft, Class C1a):

*30 Jun 1967

Prof Edgar J. Leshar 146.945 knots (272.320 km/h; 169.211 mph)

Record for speed over a 2,000 km closed circuit (light aircraft, Class C1a):

*20 Oct 1967

Prof Edgar J. Leshar 123.170 knots (228.260 km/h; 141.834 mph)

Record for distance in a straight line (light aircraft, Class C1a):

*2 Jul 1975

Prof Edgar J. Leshar 1,593.934 nm (2,953.890 km; 1,835.459 miles)

**still unbeaten in 1978*

In 1961, Prof Edgar Leshar of the University of Michigan designed and built a two-seat pusher monoplane named the Nomad. With it he won the award for the most original design at an Experimental Aircraft Association fly-in, and the grand prize in the 1964 AC Spark Plug Rally. The Teal was then built as a single-seat version with retractable landing gear, with the aim of establishing records for aircraft weighing less than 500 kg.



(USSR)

First flight 1966 (?)

Single-seat interceptor and reconnaissance aircraft

Data: MiG-25 (Foxbat-A), estimated

Power plant: Two Tumansky R-31 (R-266) turbojet engines (each 11,000 kg; 24,250 lb st with afterburning)

Wing span: 13.95 m (45 ft 9 in)

Length overall: 22.30 m (73 ft 2 in)

Height overall: 5.60 m (18 ft 4¼ in)

Wing area: 56.00 m² (602.78 sq ft)

Basic operating weight empty: 20,000 kg (44,100 lb)

Max T-O weight: 36,200 kg (79,800 lb)

Never-exceed combat speed: Mach 2.8, with missiles

Service ceiling: 24,400 m (80,050 ft)

Normal combat radius: 610 nm (1,130 km; 702 miles)

Record for speed over a 100 km closed circuit:

*8 Apr 1973

Col Alexander M. Fedotov 1,405.725 knots

(2,605.100 km/h; 1,618.731 mph)

Record for speed over a 500 km closed circuit:

*5 Oct 1967

M. Komarov 1,608.832 knots (2,981.500 km/h;

1,852.615 mph)

Records for speed over a 1,000 km closed circuit:

**27 Oct 1967

Pyotr M. Ostapenko 1,576.008 knots (2,920.670 km/h;

1,814.817 mph)

MIKOYAN E-266 (MiG-25)

Absolute records for height:

*Sep 1977

Col Alexander M. Fedotov (E-266M) 37,650 m
(123,523 ft)

25 Jul 1973

Col Alexander M. Fedotov (E-266) 36,240 m
(118,898 ft)

Records for height with payload:

*25 Jul 1973

Col Alexander M. Fedotov 35,230 m (115,584 ft) with
1,000 and 2,000 kg

***qualifying also for speed with payloads of 1,000 and
2,000 kg (latter unbeaten in 1978)*

**still unbeaten in 1978*

Known to NATO as Foxbat, the MiG-25 is the fastest combat aircraft currently equipping any air force in the world, the USAF's SR-71A being used only for unarmed reconnaissance. The Foxbat-B and D reconnaissance versions of the MiG-25 are believed to be capable of flying at Mach 3.2 at altitude, being made largely of steel, with titanium wing leading-edges. The missile-armed Foxbat-A interceptor is 'red-lined' at Mach 2.8 when carrying weapons. The aircraft used for record attempts are designated E-266 by the Soviet Union. Thus the E-266M can be assumed to be modified by the installation of more powerful engines.



First flight 17 September 1962

Transport and general purpose helicopter

Power plant: Two Isotov TV2-117A turboshaft engines (each 1,500 shp)

Main rotor diameter: 21.29 m (69 ft 10¹/₄ in)

Length of fuselage: 18.31 m (60 ft 0³/₄ in)

Height overall: 5.65 m (18 ft 6¹/₂ in)

Main rotor disc area: 355.00 m² (3,821.18 sq ft)

Weight empty (passenger version): 7,261 kg (16,007 lb)

Normal T-O weight: 11,100 kg (24,470 lb)

Max cruising speed: 122 knots (225 km/h; 140 mph)

Service ceiling: 4,500 m (14,760 ft)

Range (passenger version), with reserves: 229 nm (425 km; 264 miles) at 1,000 m (3,280 ft)

Record for speed over a 2,000 km closed circuit (helicopters, women):

***14 Sep 1967**

Inna Kopets 126.871 knots (235.119 km/h; 146.096 mph)

Record for distance in a straight line (helicopters, women):

***15 Aug 1969**

Inna Kopets 1,204.516 nm (2,232.218 km; 1,387.033 miles)

Record for distance in a closed circuit (helicopters, women):

***14 Sep 1967**

Inna Kopets 1,123.578 nm (2,082.224 km; 1,293.832 miles)

**still unbeaten in 1978*

Intended as a replacement for the 8/16-passenger piston-engined Mi-4, the Mi-8 gave an early indication of the increased capability that would follow the Soviet switch to turbine power. Within the same overall dimensions as its predecessor, the Mi-8 could carry up to 28 passengers, with accompanying improvements in economy and performance. More than 5,000 had been built by 1978, mainly for military use.



First flight 27 February 1965

Long range heavy transport

Power plant: Four Kuznetsov NK-12MA turboprop engines (each 15,000 shp)

Wing span: 64.40 m (211 ft 3½ in)

Length overall: 57.80 m (189 ft 7½ in)

Height overall: 12.53 m (41 ft 1¼ in)

Wing area: 345.00 m² (3,713.55 sq ft)

Weight empty, equipped: 114,000 kg (251,325 lb)

Max T-O weight: 250,000 kg (551,560 lb)

Max level speed: 399 knots (740 km/h; 460 mph)

Range with max fuel and 45,000 kg (99,200 lb)

payload: 5,905 nm (10,950 km; 6,800 miles)

Records for speed with payload over a 1,000 km closed circuit:

*21 Feb 1972

Marina Popovich, A. Timofeev and crew of 6 328.322 knots (608.449 km/h; 378.072 mph) with 30,000, 35,000, 40,000, 45,000 and 50,000 kg

Records for speed with payload over a 2,000 km closed circuit:

*19 Feb 1972

Marina Popovich, A. Timofeev and crew of 6 320.157

knots (593.318 km/h; 368.670 mph) with 30,000, 35,000, 40,000, 45,000 and 50,000 kg

Records for speed with payload over a 5,000 km closed circuit:

*21 Oct 1974

S. Dedoukh and crew 322.297 knots (597.283 km/h; 371.134 mph) with 30,000 kg

*24 Oct 1974

Y. Romanov and crew 317.633 knots (588.639 km/h; 365.763 mph) with 35,000 kg

*17 Apr 1975

G. Pakilev and crew 315.152 knots (584.042 km/h; 362.906 mph) with 40,000 kg

Records for height with payload:

*26 Oct 1967

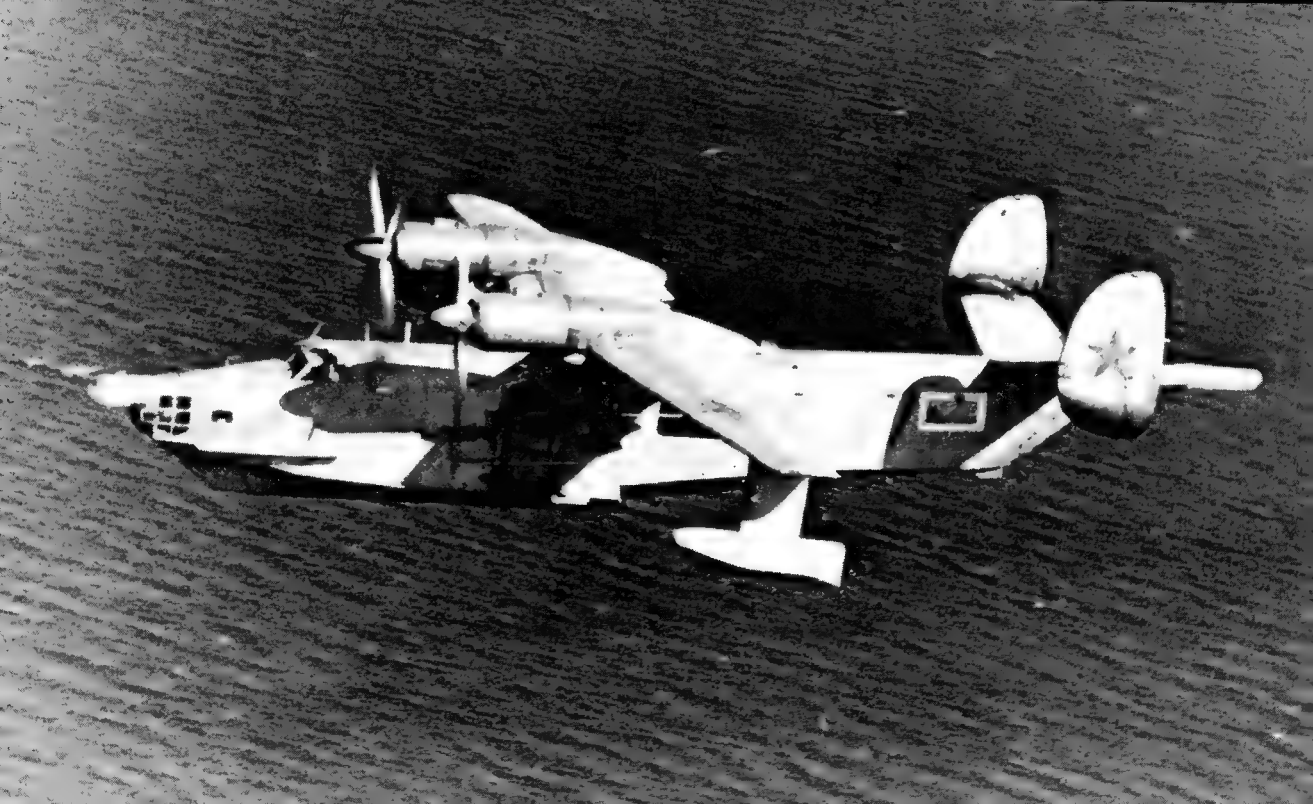
I. Davydov and crew of 7 7,848 m (25,748 ft) with 35,000, 40,000, 45,000, 50,000, 55,000, 60,000, 65,000, 70,000, 75,000, 85,000, 90,000, 95,000 and 100,000 kg

Record for payload to height of 2,000 m:

*26 Oct 1967

I. Davydov and crew of 7 100,444.6 kg (221,442.2 lb)

**still unbeaten in 1978*



First flight 1960 (?)

ASW and maritime reconnaissance amphibian

Power plant: Two Ivchenko AI-20D turboprop engines (each 4,000 shp)

Wing span: 29.28 m (96 ft 0¾ in)

Length overall: 32.94 m (108 ft 0¾ in)

Height overall: 7.00 m (22 ft 11½ in)

Wing area: 105.00 m² (1,130.21 sq ft)

Max T-O weight: 29,500 kg (65,036 lb)

Max level speed: 329 knots (610 km/h; 379 mph)

Max rate of climb at S/L: 840 m (2,756 ft)/min

Service ceiling: 11,300 m (37,075 ft)

Max range: 2,158 nm (4,000 km; 2,485 miles)

Record for speed over a 500 km closed circuit (turboprop seaplanes):

*25 Apr 1968

Eugene Nikitin 305.064 knots (565.347 km/h; 351.290 mph)

Record for speed over a 500 km closed circuit (turboprop amphibians):

*24 Apr 1968

A. Sushko 298.013 knots (552.279 km/h; 343.170 mph)

One of about 100 production M-12s delivered for service with the Soviet Naval Air Force

Record for speed over a 1,000 km closed circuit (turboprop seaplanes):

*12 Oct 1968

Eugene Nikitin 297.792 knots (551.871 km/h; 342.916 mph)

Record for speed over a 1,000 km closed circuit (turboprop amphibians):

*9 Oct 1968

A. Sushko 293.919 knots (544.693 km/h; 338.456 mph)

Records for speed over a 2,000 km closed circuit (turboprop seaplanes):

** *30 Oct 1972

A. Zakharov 300.011 knots (555.983 km/h; 345.471 mph)

Records for speed over a 2,000 km closed circuit (turboprop amphibians):

*** *31 Oct 1972

P. Yakushin 300.446 knots (556.789 km/h; 345.972 mph)

Records for speed with payload over a 1,000 km closed circuit (turboprop seaplanes):

*21 Apr 1970

A. Zakharov 289.268 knots (536.074 km/h; 333.100 mph) with 1,000 kg

*8 Jul 1970

P. Yakushin 288.844 knots (535.288 km/h;
332.612 mph) with 2,000 kg
*9 Jul 1970

Eugene Nikitin 285.450 knots (528.998 km/h;
328.703 mph) with 5,000 kg

**Records for speed with payload over a 1,000 km
closed circuit (turboprop amphibians):**
*21 Apr 1970

A. Suchov 283.838 knots (526.011 km/h;
326.847 mph) with 1,000 kg
*8 Jul 1970

A. Smirnov 286.263 knots (530.504 km/h;
329.639 mph) with 2,000 kg
*9 Jul 1970

A. Zakharov 284.159 knots (526.606 km/h;
327.217 mph) with 5,000 kg

**Records for speed with payload over a 2,000 km
closed circuit (turboprop seaplanes):**
*28 Oct 1973

V. Averchine 295.996 knots (548.542 km/h;
340.848 mph) with 2,000 kg
*29 Oct 1973

Eugene Nikitin 258.724 knots (479.470 km/h;
297.928 mph) with 5,000 kg

**Record for speed with payload over a 2,000 km closed
circuit (turboprop amphibians):**
*30 Oct 1973

A. Sushko 263.717 knots (488.722 km/h;
303.677 mph) with 5,000 kg

**Records for height with payload (turboprop
amphibians):**
*23 Oct 1964

M. Mikhailov 11,366 m (37,290 ft) with 1,000 and
2,000 kg

*24 Oct 1964

M. Mikhailov 10,685 m (35,056 ft) with 5,000 kg

*27 Oct 1964

M. Mikhailov 9,352 m (30,682 ft) with 10,000 kg

Record for payload to height (turboprop amphibians):
*27 Oct 1964

M. Mikhailov 10,100 kg (22,266 lb) to 2,000 m

**Record for distance in a closed circuit (turboprop
seaplanes):**
*20 Nov 1973

G. Efimov 1,393.055 nm (2,581.620 km; 1,604.141
miles)

**Record for distance in a closed circuit (turboprop
amphibians):**
*25 Oct 1973

Vladimir Svyatochnur 1,382.952 nm (2,562.897 km;
1,592.507 miles)

***qualifying also for speed with payload of 1,000 kg*

****qualifying also for speed with payloads of 1,000 and
2,000 kg*

**still unbeaten in 1978*

Record for height (turboprop amphibians):

*23 Oct 1964

M. Mikhailov 12,185 m (39,977 ft)

Record for height in horizontal flight (turboprop seaplanes):

*28 Apr 1975

V. Averchine 8,223 m (26,978 ft)

Record for height in horizontal flight (turboprop amphibians):

*28 Apr 1975

V. Efimov 8,289 m (27,195 ft)

Records for time to height (turboprop seaplanes):

*5 Nov 1974

Vladimir Belov 3,000 m in 5 min 9.8 sec

*14 Nov 1974

Eugene Nikitin 6,000 m in 11 min 57.4 sec

*29 Apr 1975

V. Averchine 9,000 m in 22 min 9.8 sec

Records for time to height (turboprop amphibians):

*14 Nov 1974

A. Zakharov 3,000 m in 5 min 6.2 sec

*5 Nov 1974

V. Averchine 6,000 m in 12 min 24.6 sec

*29 Apr 1975

V. Efimov 9,000 m in 27 min 3.4 sec





First flight 2 August 1961

Single-seat research autogyro

Power plant: One modified McCulloch 4318A flat-four piston engine (72 hp)

Rotor diameter: 6.20 m (20 ft 4 in)

Length of fuselage (excl pitot probe): 3.38 m (11 ft 1 in)

Height overall: 1.85 m (6 ft 1 in)

Rotor disc area: 30.10 m² (324.00 sq ft)

Weight empty, equipped: 116 kg (255 lb)

Max certificated T-O weight: 250 kg (550 lb)

Max level speed: 100 knots (185 km/h; 115 mph) at S/L

Max rate of climb at S/L: 410 m (1,350 ft)/min

Service ceiling: above 3,050 m (10,000 ft)

Range with standard fuel: 121 nm (225 km; 140 miles)

Records for speed over a 3 km course (rotorplanes, Classes E3 and E3a):

****12 May 1969**

**Wg Cdr Kenneth H. Wallis 96.589 knots (179.000km/h; 111.225 mph)*

Records for speed over a 15 km course (rotorplanes, Classes E3 and E3a):

***17 July 1978 (awaiting confirmation)**

Opposite: This former WA-116/Mc was modified to WA-116/F standard, with a Franklin engine. Carrying the underbelly auxiliary fuel tank shown in the photograph, it set the present rotorplane straight-line distance record with a non-stop flight from Lydd, Kent, to Wick, Caithness

Wg Cdr Kenneth H. Wallis approx 90.65 knots (168.000 km/h; 104.4 mph)

Records for height (rotorplanes, Classes E3 and E3a):
11 May 1968

**Wg Cdr Kenneth H. Wallis 4,639 m (15,220 ft)*

Records for distance in a straight line (rotorplanes, Classes E3 and E3a):

*****28 Sep 1975**

**Wg Cdr Kenneth H. Wallis 472.092 nm (874.315 km; 543.274 miles)*

***90 hp modified McCulloch*

****60 hp Franklin engine; also set duration record of 6 hr 25 min*

**still unbeaten in 1978*

Although similar in basic configuration to the Bensen B-8M (page 196), the Wallis WA-116 is one of a family of light autogyros that are built only for professional use, in limited numbers. Records already set give testimony to the outstanding performance of the WA-116, which is often equipped with special cameras to detect illicit graves (eg of murder victims) from the air, on behalf of the British Home Office. Another WA-116 appeared in a James Bond film as 'Little Nellie', a rotorplane from which rockets were fired.



(USSR)

MIL V-12 (Mi-12)

First flight 1967 (?)

Heavy-lift general purpose helicopter

Power plant: Four Soloviev D-25VF turboshaft engines (each 6,500 shp)

Rotor diameter (each): 35.00 m (114 ft 10 in)

Span over rotor tips: 67.00 m (219 ft 10 in)

Length of fuselage: 37.00 m (121 ft 4½ in)

Height overall: 12.50 m (41 ft 0 in)

Rotor disc area (each): 962.11 m² (10,356.09 sq ft)

Normal T-O weight: 97,000 kg (213,850 lb)



Max cruising speed: 130 knots (240 km/h; 150 mph)

Service ceiling: 3,500 m (11,500 ft)

Range with 35,400 kg (78,000 lb) payload: 270 nm (500 km; 310 miles)

Records for height with payload (helicopters):

*22 Feb 1969

Vasily P. Kolochenko 2,951 m (9,682 ft) with 20,000, 25,000 and 30,000 kg

*6 Aug 1969

Vasily P. Kolochenko 2,255 m (7,398 ft) with 35,000 and 40,000 kg

Record for payload to height (helicopters):

*6 Aug 1969

Vasily P. Kolochenko 40,204.5 kg (88,635.6 lb) to 2,000 m

**still unbeaten in 1978*

The Mil V-12 is by far the largest and most powerful helicopter yet flown. Each of its inversely-tapered wings carries at its tip a complete power plant and rotor package of the kind used on the Mi-6, but with uprated engines. In record flights it has carried a payload much greater than the maximum loaded weight of the largest helicopter yet built anywhere else in the world. Prototype V-12s have been demonstrated publicly, including a visit to the Paris Air Show. Photographs have shown V-12s in operation as commercial freighters; but there is little to suggest that series production has yet been undertaken.



(W Germany)

DORNIER Do 31 E 3

First flight (Do 31 E 1) 10 February 1967

Experimental V/STOL transport

Power plant: Two Rolls-Royce Bristol Pegasus 5-2 vectored-thrust turbofan engines (each 7,030 kg; 15,500 lb st) for propulsion; eight Rolls-Royce RB.162-4D turbojet lift engines (each 1,995 kg; 4,400 lb st), four in each wingtip pod

Wing span: 18.06 m (59 ft 3 in)

Length overall: 20.88 m (68 ft 6 in)

Height overall: 8.53 m (28 ft 0 in)

Wing area: 57.00 m² (613.54 sq ft)

Basic operating weight: 22,500 kg (49,604 lb)

Max T-O weight: 27,500 kg (60,627 lb)

Cruising speed at 6,000 m (19,685 ft): 347 knots (650 km/h; 400 mph)

Max rate of climb at S/L: 1,600 m (5,250 ft)/min

Service ceiling: 10,500 m (34,450 ft)

Record for distance in a straight line (jet-lift aircraft):

*27 May 1969

Drury Wood 367.471 nm (681.000 km; 423.153 miles)

Record for speed over Munich-Paris course (jet-lift aircraft):

*27 May 1969

Drury Wood 277.336 knots (513.962 km/h; 319.361 mph)

**still standing in 1978*

Unlike most fixed-wing V/STOL aircraft built and tested over the past twenty years, the Do 31 E 3 was highly successful. Its two propulsion engines were Pegasus turbofans, fitted with the same kind of thrust-vectoring nozzles as the engine of a Harrier V/STOL combat aircraft. When their efflux was vectored downward for take-off and landing, they were supplemented by lift-jets in the wingtip pods. The noise was excruciating, but the technique worked, as two long-standing records prove.



Both photographs show doors on wingtip pods open for lift-jet operation. In view on left, the landing gear is already beginning to retract as the aircraft starts to move forward



(USA)

First flight (XF8F-1) 21 August 1944

Single-seat racing monoplane (converted from F8F-2 fighter)

Power plant: One Pratt & Whitney R-2800-CA18/CB17 Twin Wasp fourteen-cylinder two-row radial piston engine (3,000 hp)



Above Darryl Greenamyer (left) with Fritz Wendel (centre) whose speed record he broke after it had stood for thirty years

GRUMMAN BEARCAT 'CONQUEST I'

Wing span: approx 8.84 m (29 ft 0 in)

Length overall: approx 9.14 m (30 ft 0 in)

Height overall: 4.22 m (13 ft 10 in)

Weight empty: approx 2,721 kg (6,000 lb)

Record for speed (piston-engined aircraft) over a 3 km course, restricted altitude:

***16 Aug 1969**

Darryl G. Greenamyer Edwards AFB 418.976 knots
(776.449 km/h; 482.462 mph)

**still unbeaten in 1978*

This is the aircraft which finally beat the low-altitude straight-line speed record set just before the second World War by Fritz Wendel in the Me 209. Built originally as a US Navy fighter, it began its racing career at the Reno National Air Races in 1964, finishing fourth. During the next year it was completely rebuilt. A different engine was installed, with a larger propeller and P-51 spinner. A new, small canopy was fitted. Three and a half feet were clipped off each wingtip, and many internal changes were made. For the next four years, the Bearcat proved unbeatable at Reno; but attempts to capture the 3 km speed record were less successful. Reduction of the vertical tail area made the aircraft unstable during a 1966 attempt. In 1968 a piston melted. Not until 1969 did Greenamyer achieve his ambition. Meanwhile, he had had to be content with amassing more Mach 3 flying time than anyone else as a test pilot on the Lockheed SR-71A!



(USA)

SIKORSKY S-67 BLACKHAWK

First flight 20 August 1970

Prototype high-speed combat helicopter

Power plant: Two General Electric T58-GE-5 turboshaft engines (each 1,500 shp)

Main rotor diameter: 18.90 m (62 ft 0 in)

Wing span: 8.33 m (27 ft 4 in)

Length overall: 22.66 m (74 ft 4 in)



Height overall (rotors turning): 5.49 m (18 ft 0 in)

Main rotor disc area: 280.48 m² (3,019.07 sq ft)

Weight empty: 5,676 kg (12,514 lb)

Max T-O weight: 10,000 kg (22,050 lb)

Max level speed: 168 knots (310 km/h; 193 mph)

Max rate of climb at S/L: 716 m (2,350 ft)/min

Service ceiling: 5,180 m (17,000 ft)

Endurance with 680 kg (1,500 lb) payload: 3 hr 0 min

Record for speed over a 3 km course (helicopters):

*14 Dec 1970

Byron Graham 188.306 knots (348.971 km/h;
216.840 mph)

Record for speed over a 15-25 km course (helicopters):

*19 Dec 1970

Kurt F. Cannon 191.821 knots (355.485 km/h;
220.888 mph)

**still unbeaten in 1978*

Fastest pure helicopter yet flown, the S-67 was developed by Sikorsky as a private venture, following the success of the Bell AH-1G HueyCobra gunship. By utilising the proven dynamic system of the Sikorsky S-61R, the prototype flew only one year after the start of design. After four years of testing and demonstration, this aircraft was lost in an accident at the 1974 SBAC Flying Display in England. Kurt Cannon and his companion lost their lives, and further development of the S-67 was abandoned.



(UK)

First flight 31 August 1966

Single-seat V/STOL close support and reconnaissance aircraft

Power plant: One Rolls-Royce Pegasus 102 vectored-thrust turbofan engine (9,071 kg; 20,000 lb st)

Wing span (combat): 7.70 m (25 ft 3 in)

Length overall: 13.87 m (45 ft 6 in)

Height overall: approx 3.43 m (11 ft 3 in)

Wing area (combat): 18.68 m² (201.10 sq ft)

Basic operating weight empty, with crew: 5,533 kg (12,200 lb)

Max T-O weight: more than 11,340 kg (25,000 lb)

Max level speed at low altitude: more than 640 knots (1,186 km/h; 737 mph) EAS

Service ceiling: above 15,240 m (50,000 ft)

Range with one in-flight refuelling: more than 3,000 nm (5,560 km; 3,455 miles)

Record for height (jet-lift aircraft):

*2 Jan 1971

Sqn Ldr T. L. Lecky-Thompson 14,040 m (46,063 ft)

A Harrier about to make a vertical landing in a disused coal-yard at St Pancras after flying the Atlantic west-to-east on 9 May 1969 in the *Daily Mail* race. The pilot, Sqn Ldr Graham Williams, checked into the Post Office Tower race control centre 5 hr 49 min 58 sec after leaving the top of the Empire State Building

HAWKER SIDDELEY HARRIER GR Mk 1A

Records for time to height (jet-lift aircraft):

*5 Jan 1971

Sqn Ldr T. L. Lecky-Thompson 9,000 m in 1 min 44.7 sec; 12,000 m in 2 min 22.7 sec

**still unbeaten in 1978*

The Harrier was the final product of Hawker Siddeley's Kingston works under the design leadership of Sir Sydney Camm. During more than 40 years as Chief Designer, he had given the Royal Air Force its first fighters capable of, successively, 200 mph (the Fury I), 300 mph (Hurricane) and 400 mph (Typhoon). The Harrier gave it a combat aircraft that combined the go-anywhere capability of a helicopter with the ability to exceed the speed of sound in a dive. First overseas air force to order it was the US Marine Corps. Before setting the above records, in May 1969, Sqn Ldr Lecky-Thompson won the east-west section of the *Daily Mail* Transatlantic Race, from the top of the Post Office Tower in London to the top of the Empire State Building in New York. Flying time from a coal-yard near St Pancras Station, London, to a landing ground in New York was 6 hr 11 min, with refuelling in flight over the sea.



(USA)

LOCKHEED P-3 ORION

First flight 19 August 1958

ASW and maritime patrol aircraft

Data: P-3C

Power plant: Four Allison T56-A-14 turboprop engines (each 4,910 ehp)

Wing span: 30.37 m (99 ft 8 in)

Length overall: 35.61 m (116 ft 10 in)

Height overall: 10.29 m (33 ft 8½ in)

Wing area: 120.77 m² (1,300.00 sq ft)

Weight empty: 27,890 kg (61,491 lb)



Opposite: Holder of the closed-circuit distance record for turboprop aircraft, the RP-3D was built for a five-year mission to map the Earth's magnetic field.

Above: Cdr Donald Lilienthal and his co-pilot

Max normal T-O weight: 61,235 kg (135,000 lb)

Econ cruising speed at 49,895 kg (110,000 lb) AUW:

328 knots (608 km/h; 378 mph) at 7,620 m (25,000 ft)

Service ceiling: 8,625 m (28,300 ft)

Mission radius at 457 m (1,500 ft), 3 hr on station:

1,346 nm (2,494 km; 1,550 miles)

Record for speed over a 15-25 km course, unrestricted altitude (turboprop aircraft):

*27 Jan 1971

Cdr Donald H. Lilienthal and crew (P-3C) 434.976 knots

(806.100 km/h; 500.886 mph)

Records for time to height (turboprop aircraft):

8 Feb 1971

Cdr Donald H. Lilienthal and crew (P-3C) 3,000 m in

2 min 51.749 sec; 6,000 m in 5 min 46.360 sec; 9,000 m

in 10 min 26.121 sec; *12,000 m in 19 min 42.238 sec

Record for distance in a straight line (turboprop aircraft):

22 Jan 1971

Cdr Donald H. Lilienthal and crew of 8 (P-3C) 6,087 nm

(11,281 km; 7,010 miles)

Record for distance in a closed circuit (turboprop aircraft):

*4 Nov 1972

Cdr Philip R. Hite and crew (RP-3D) 5,451.905 nm

(10,103.510 km; 6,278.018 miles)

**still unbeaten in 1978*



(USA)



BEECHCRAFT BARON MODEL 95-B55

First flight 29 February 1960

Four/six-seat cabin monoplane

Power plant: Two Rolls-Royce Continental IO-470-L flat-six piston engines (each 260 hp)

Wing span: 11.53 m (37 ft 10 in)

Length overall: 8.53 m (28 ft 0 in)

Height overall: 2.92 m (9 ft 7 in)

Wing area: 18.50 m² (199.20 sq ft)

Weight empty: 1,431 kg (3,156 lb)

Max T-O weight: 2,313 kg (5,100 lb)

Max cruising speed: 195 knots (362 km/h; 225 mph) at 2,135 m (7,000 ft)

Service ceiling: 6,005 m (19,700 ft)

Typical range, with reserves: 942 nm (1,746 km; 1,085 miles)

Record for speed around the world (light aircraft, Class C1d):

*4-10 Oct 1971

Trevor K. Brougham and R. N. Dickeson 171.745 knots (318.280 km/h; 197.770 mph)

**still unbeaten in 1978*

Opposite: Private aircraft used for long-distance flights tend to display the names of many sponsors. The Baron of Trevor Brougham and Bob Dickeson was no exception. Left: Sixty years after Alcock and Brown, transatlantic delivery flights are routine for lightplanes like these D55 Barons, bound for the College of Air Training in England



First flight 9 May 1962

Heavy lift flying crane helicopter

Power plant: Two Pratt & Whitney JFTD12-5A turboshaft engines (each 4,800 shp)

Main rotor diameter: 21.95 m (72 ft 0 in)

Length of fuselage: 21.41 m (70 ft 3 in)

Height overall: 7.75 m (25 ft 5 in)

Main rotor disc area: 378.12 m² (4,070.00 sq ft)

Weight empty (CH-54A): 8,724 kg (19,234 lb)

Max T-O weight (CH-54B): 21,318 kg (47,000 lb)

Max cruising speed (CH-54A): 91 knots (169 km/h; 105 mph)

Service ceiling (CH-54A): 2,475 m (9,000 ft)

Range with max fuel, 10% reserves (CH-54A): 200 nm (370 km; 230 miles)

Record for height in horizontal flight (helicopters):

*4 Nov 1971

CWO J. K. Church 11,010 m (36,122 ft)

Records for height with payload (helicopters):

*26 Oct 1971

B. P. Blackwell 9,499 m (31,165 ft) with 1,000 kg

*29 Oct 1971

CWO E. E. Price 9,595 m (31,480 ft) with 2,000 kg

*27 Oct 1971

CWO E. E. Price 7,778 m (25,518 ft) with 5,000 kg

*29 Oct 1971

CWO J. K. Church 5,246 m (17,211 ft) with 10,000 kg

*12 Apr 1972

CWO D. L. Spivey 3,307 m (10,850 ft) with 15,000 kg

Records for time to height (helicopters):

*12 Apr 1972

Major J. C. Henderson 3,000 m in 1 min 22.2 sec

*12 Apr 1972

Major J. C. Henderson 6,000 m in 2 min 58.9 sec

*4 Nov 1971

CWO D. W. Hunt 9,000 m in 5 min 57.7 sec

**still unbeaten in 1978*

This pioneer flying crane helicopter can boast a long period of very successful front-line service in Vietnam, as well as the string of seven-year-old records that no other aircraft has yet matched. One of its main tasks was to retrieve damaged aircraft and haul them back to base workshops for repair. In this role alone, CH-54s saved the US taxpayer an estimated \$210 million, by ferrying 380 aircraft. On another occasion, a CH-54A lifted 90 persons, including 87 combat-equipped troops in a detachable van. This is believed to be the largest number of people ever carried by a helicopter at one time.



(USA)

LOCKHEED HC-130H HERCULES

First flight 23 August 1954

Multi-purpose transport, search and rescue aircraft

Power plant: Four Allison T56-A-15 turboprop engines (each 4,910 ehp, limited to 4,500 ehp)

Wing span: 40.41 m (132 ft 7 in)

Length overall: 30.10 m (98 ft 9 in) with recovery system folded; 32.41 m (106 ft 4 in) with system spread

Height overall: 11.66 m (38 ft 3 in)



Opposite Official welcome for Lt Col Allison and his crew after their record-breaking flight in the HC-130H shown in the picture. Above: Another of the USAF's HC-130Hs, with nose-mounted recovery gear deployed

Wing area: 162.12 m² (1,745.00 sq ft)

Operating weight empty (C-130H): 34,169 kg (75,331 lb)

Max normal T-O weight (C-130H): 70,310 kg (155,000 lb)

Max cruising speed: 318 knots (589 km/h; 366 mph)

Service ceiling (C-130H): 10,060 m (33,000 ft)

Range with max payload, with reserves (C-130H): 2,160 nm (4,002 km; 2,487 miles)

Record for distance in a straight line (turboprop aircraft):

*20 Feb 1972

Lt Col Edgar L. Allison and crew Taiwan-Scott AFB 7,583.042 nm (14,052.950 km; 8,732.082 miles)

**still unbeaten in 1978*

Although more than 1,500 C-130 Hercules turboprop transports have been ordered for worldwide service, these sturdy aircraft hold but a single FAI-recognised record. However, some other aspects of the Hercules' career make interesting reading. In 1963, for example, a US Marine Corps KC-130F became the largest aircraft ever to land on, or take off from, an aircraft carrier without using tailhook arrest or catapult launch; altogether it made 29 touch-and-go and 21 full stop landings on the USS *Forrestal*. The world's highest paradrop was recorded when nine US Marine parachutists jumped from a C-130 flying at an altitude of 13,440 m (44,100 ft).



(USA)

E-SYSTEMS (formerly LTV Electrosystems) L450F



First flight February 1970

Single-seat experimental high-altitude reconnaissance aircraft

Power plant: One Pratt & Whitney Aircraft of Canada PT6A-34 turboprop engine (derated to 475 ehp)

Wing span: 17.37 m (57 ft 0 in)

Length overall: 9.02 m (29 ft 7 in)

Height overall: 3.25 m (10 ft 8 in)

Weight empty: 1,089 kg (2,400 lb)

Max T-O weight: 2,086 kg (4,600 lb)

Cruising speed: 91 knots (170 km/h; 105 mph) IAS at 13,715 m (45,000 ft)

Max rate of climb at S/L: 914 m (3,000 ft)/min

Service ceiling: above 15,240 m (50,000 ft)

Endurance: more than 24 hr

Records for height (turboprop aircraft, Classes C1 and C1c):

*27 Mar 1972

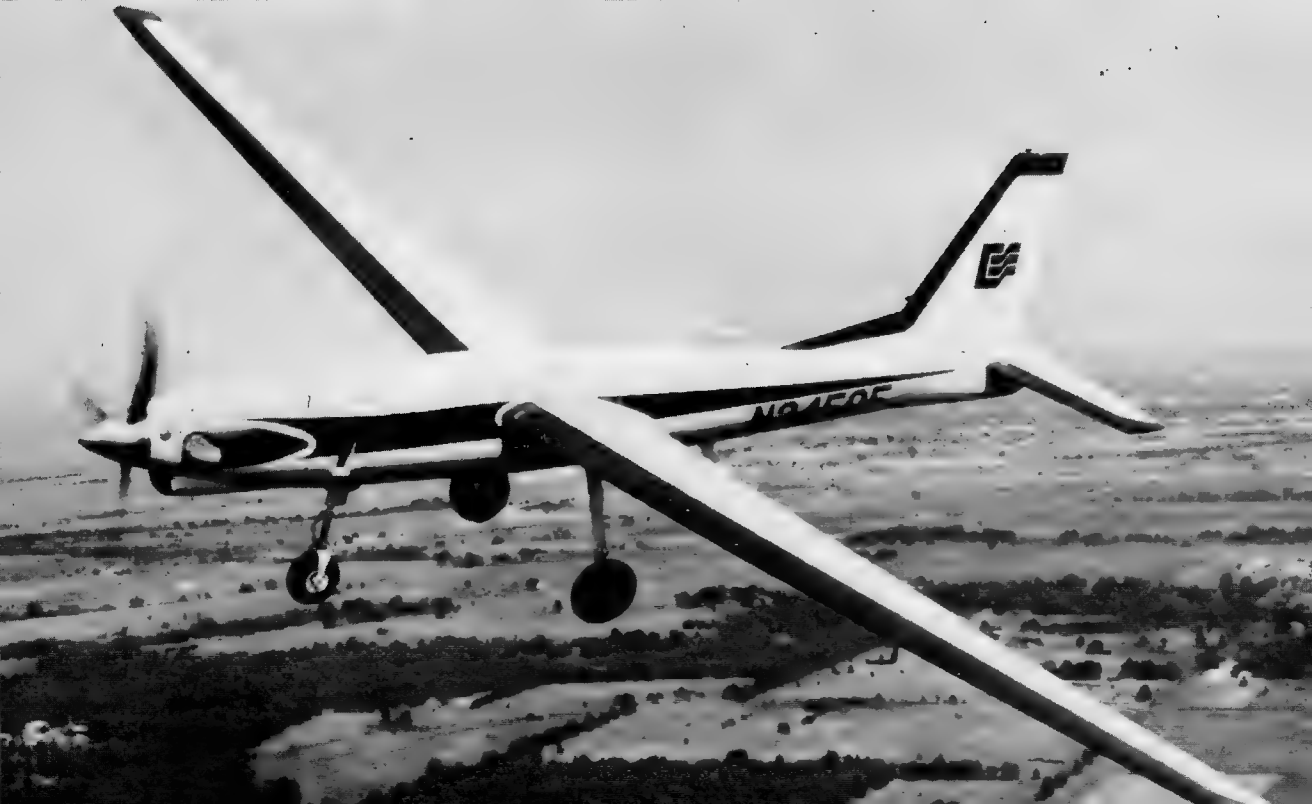
Donald R. Wilson Greenville 15,549 m (51,014 ft)

Record for height (turboprop aircraft, Class C1d):

*23 Mar 1972

Donald R. Wilson Greenville 13,783 m (45,220 ft)

Donald Wilson in the cockpit of the L450F



Records for height in horizontal flight (turboprop aircraft, Classes C1 and C1c):

***27 Mar 1972**

Donald R. Wilson Greenville 15,456 m (50,709 ft)

Record for height in horizontal flight (turboprop aircraft, Class C1d):

***23 Mar 1972**

Donald R. Wilson Greenville 13,779 m (45,207 ft)

Record for time to height (turboprop aircraft, Class C1):

***27 Mar 1972**

Donald R. Wilson Greenville 15,000 m in 46 min 29.2 sec

Records for time to height (turboprop aircraft, Class C1b):

***27 Mar 1972**

Donald R. Wilson Greenville 6,000 m in 7 m in 16.4 sec; 9,000 m in 12 min 18.7 sec; 12,000 m in 20 min 15.0 sec; 15,000 m in 46 min 29.2 sec

Record for time to height (turboprop aircraft, Class C1c):

***27 Mar 1972**

Donald R. Wilson Greenville 3,000 m in 3 min 29.8 sec

Records for time to height (turboprop aircraft, Class C1d):

***23 Mar 1972**

Donald R. Wilson Greenville 3,000 m in 4 min 15.8 sec; 6,000 m in 8 min 50.8 sec; 9,000 m in 15 min 27.6 sec; 12,000 m in 27 min 30.8 sec

**still unbeaten in 1978*

The E-Systems L450F embodies the much-modified basic airframe of a Schweizer SGS 2-32 sailplane. Two prototypes were built, to evaluate the usefulness of such aircraft as pilotless electronic relay devices (like communications satellites) and for various kinds of intelligence gathering. Both were tested in piloted form. Before it set the records listed, the second prototype was converted to pilotless form and achieved a non-stop flight of more than 21 hours over Edwards Air Force Base, California, on 24-25 January 1972.

The L450F in pilotless form, with canopy removed and fuselage faired in



First flight 1940

Two-seat cabin monoplane

Data: S-1A Cadet

Power plant: One Continental A65 flat-four piston engine (65 hp)

Wing span: 10.82 m (35 ft 6 in)

Length overall: 7.315 m (24 ft 0 in)

Height overall: 2.26 m (7 ft 5 in)

Wing area: 16.15 m² (173.80 sq ft)

Weight empty: 306 kg (675 lb)

Max T-O weight: 544 kg (1,200 lb)

Max level speed: 94.5 knots (175 km/h; 109 mph) at S/L

Max rate of climb at S/L: 213 m (700 ft)/min

Service ceiling: 4,572 m (15,000 ft)

Range: 325 nm (603 km; 375 miles)

Record for height (light aircraft, Class C1a):

*10 Apr 1972

W. Roy Windover 9,385 m (30,791 ft)

**75 hp Continental; record still unbeaten in 1978*

This still-unbeaten record is not the only link that the Interstate Cadet has with aviation in the late 'seventies. At Anchorage in Alaska, the Arctic Aircraft Company is manufacturing and marketing an attractive little two-seat utility monoplane named Arctic Tern which is simply an updated and improved version of the S-1A Cadet. Powered by a 150 hp Lycoming engine, it has much improved performance, with a cruising speed of 102 knots (188 km/h; 117 mph) and range of up to 565 nm (1,045 km; 650 miles).

The 31-year-old Cadet which Lt Col Roy Windover, CAF, flew to a lightplane height record over Pikes Peak, near Colorado Springs, during his period of service at the joint US/Canadian North American Air Defense Command HQ



(France)

AÉROSPATIALE SA 315B LAMA

First flight 17 March 1969

Five-seat general purpose helicopter

Power plant: One Turboméca Artouste IIIB turboshaft engine (870 shp, derated to 550 shp)

Main rotor diameter: 11.02 m (36 ft 1¾ in)

Length of fuselage: 10.26 m (33 ft 8 in)

Height overall: 3.09 m (10 ft 1¾ in)

Main rotor disc area: 95.38 m² (1,026.66 sq ft)

Weight empty: 1,014 kg (2,235 lb)

Max T-O weight with slung load: 2,300 kg (5,070 lb)

Max cruising speed with slung load: 65 knots (120 km/h; 75 mph)

Service ceiling: 4,000 m (13,125 ft)

Records for height (helicopters, Class E1 and E1b):

*21 Jun 1972

Jean Boulet 12,442 m (40,820 ft)

Record for height (helicopters, Class E1c):

*19 Jun 1972

Jean Boulet 10,856 m (35,617 ft)

**still unbeaten in 1978*

Jean Boulet, test pilot for Aérospatiale Helicopters, has held the helicopter height record for twenty years. On 13 June 1958, he climbed to 10,984 m (36,027 ft) in an Alouette II. By combining the basic airframe of the Alouette II with the dynamic components of the Alouette III, including its more powerful engine and larger rotor, Aérospatiale produced the Lama to meet a requirement of the Indian armed forces. It soon proved to have impressive lift capability and, in 1969, made the highest take-offs and landings ever recorded, at a height of 7,500 m (24,600 ft) in the Himalayas, while carrying a crew of two and 140 kg (308 lb) of fuel. Three years later, Jean Boulet used a Lama to beat his own height record.





(UK/France)

WESTLAND/AÉROSPATIALE LYNX

First flight 21 March 1971

Multi-purpose military and naval helicopter

Data: Lynx AH Mk 1

Power plant: Two Rolls-Royce Gem (BS.360-07-26)
turboshaft engines (each 865 shp, derated to 843 shp)



Main rotor diameter: 12.802 m (42 ft 0 in)

Length of fuselage: 12.06 m (39 ft 6.8 in)

Height overall: 3.66 m (12 ft 0 in)

Main rotor disc area: 128.72 m² (1,385.53 sq ft)

Manufacturer's basic weight: 2,571 kg (5,668 lb)

Max T-O weight: 4,309 kg (9,500 lb)

Max continuous cruising speed: 148 knots (273 km/h;
170 mph)

Hovering ceiling out of ground effect: above 3,660 m
(12,000 ft)

Typical range (as troop transport), with reserves:
329 nm (610 km; 379 miles)

**Record for speed over a 15-25 km course (helicopters,
Class E1e):**

*20 Jun 1972

Leonard R. Moxam 173.613 knots (321.740 km/h;
199.920 mph)

**Record for speed over a 100 km closed circuit
(helicopters, Class E1e):**

*22 Jun 1972

Leonard R. Moxam 171.866 knots (318.504 km/h;
197.909 mph)

**still unbeaten in 1978*

Lynx AH Mk 1 of the British Army



(USA)

APOLLO 17 SPACECRAFT

Launched 7 December 1972

Lunar landing spacecraft

Engine thrust: Saturn V launcher (1st stage)

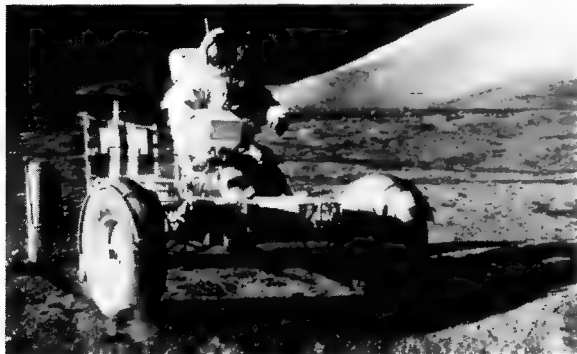
3,400,000 kg (7,500,000 lb); Service Module 9,300 kg

(25,000 lb); Lunar Module 4,400 kg (9,700 lb) for

descent, 1,590 kg (3,500 lb) for ascent

Length overall: Command Module 3.23 m (10 ft 7 in);

Service Module 7.54 m (24 ft 9 in); Lunar Module 7.00 m



Departure of Apollo 17 for the Moon was the most spectacular of all Apollo missions, as it was the only nighttime launch and was visible as far away as Cuba. Above: Astronaut Eugene A. Cernan driving the Lunar Roving vehicle on the Moon

(22 ft 11 in); Saturn V launcher, complete with Apollo payload 107.70 m (353 ft 5 in)

Diameter: Command Module and Service Module each 3.90 m (12 ft 9½ in); Lunar Module, with legs extended 9.45 m (31 ft 0 in)

Gross weights: Command Module approx 5,900 kg (13,000 lb); Service Module 30,358 kg (66,918 lb); Lunar Module 16,429 kg (36,244 lb); Lunar Roving Vehicle 209 kg (461 lb); Saturn V launcher, complete with Apollo payload 2,767,000 kg (6,100,000 lb)

Absolute record for extravehicular duration, and for extravehicular duration on the Moon:

*12, 13 and 14 Dec 1972

Eugene A. Cernan 21 hr 31 min 44 sec

Record for duration in Lunar orbit:

*10-16 Dec 1972

Ronald E. Evans 147 hr 41 min 13 sec

Duration of complete Lunar mission and return:

*7-19 Dec 1972

Eugene A. Cernan, Ronald E. Evans and Harrison H. Schmitt 301 hr 51 min 57 sec

Distance travelled from space vehicle on Lunar surface:

*13 Dec 1972

Eugene A. Cernan and Harrison L. Schmitt 7,370 m (24,180 ft)

**still unbeaten in 1978*



(France)

First flight 2 June 1972

General purpose helicopter

Power plant: One Turboméca Astazou XVIII A turboshaft engine (1,050 shp)



Opposite: The first prototype Dauphin, used for Roland Coffignot's record flights.
Above: Production Dauphin with modified nose

AEROSPATIALE SA 360 DAUPHIN

Main rotor diameter: 11.50 m (37 ft 8³/₄ in)

Length of fuselage: 11.07 m (36 ft 3⁷/₈ in)

Height overall: 3.40 m (11 ft 1³/₄ in)

Main rotor disc area: 103.87 m² (1,118.05 sq ft)

Basic operating weight: 1,555 kg (3,428 lb)

Max T-O weight: 2,800 kg (6,173 lb)

Max cruising speed: 143 knots (265 km/h; 165 mph) at S/L

Hovering ceiling in ground effect: 2,250 m (7,380 ft)

Range with max fuel: 351 nm (650 km; 405 miles) at S/L

Record for speed over a 3 km course (helicopters, Class E1d):

***16 May 1973**

Roland Coffignot Istres 168.357 knots (312.000 km/h; 193.867 mph)

Record for speed over a 15-25 km course (helicopters, Class E1d):

***17 May 1973**

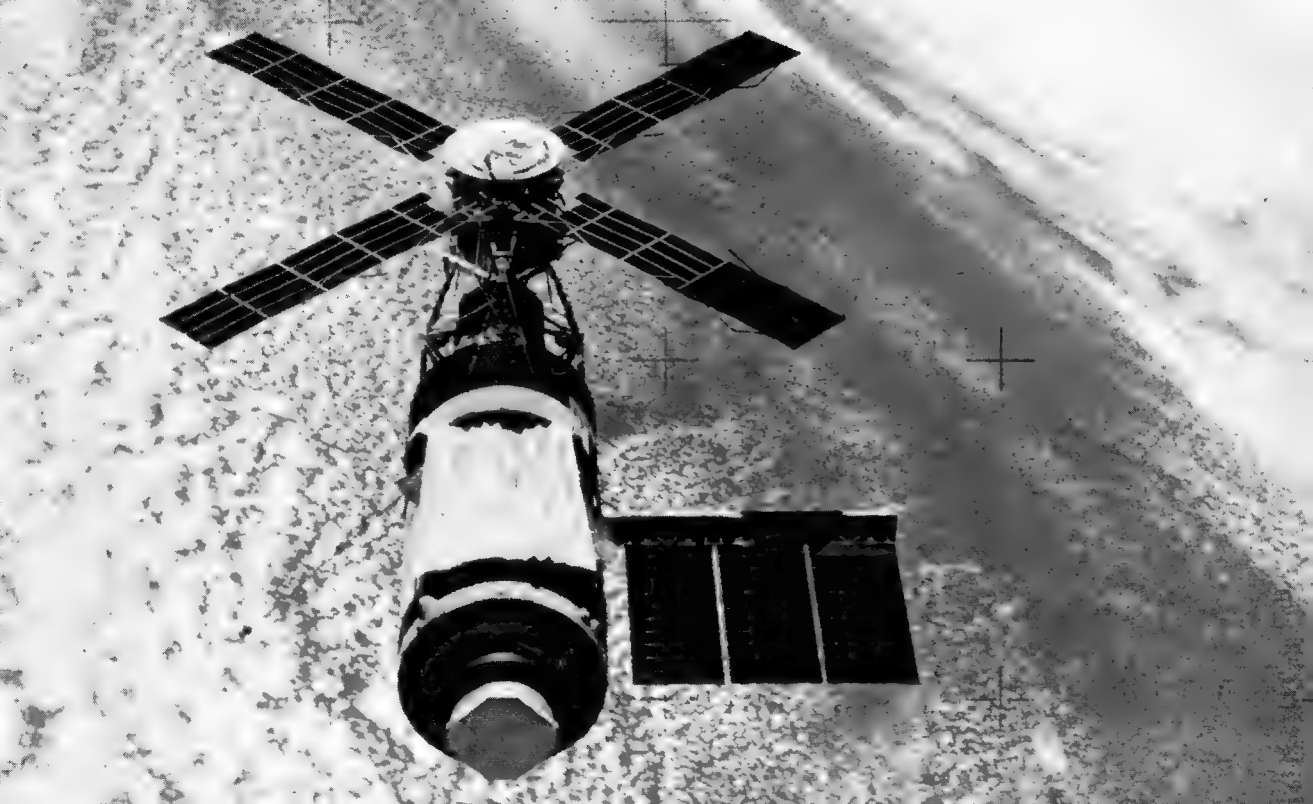
Roland Coffignot Istres 163.500 knots (303.000 km/h; 188.275 mph)

Record for speed over a 100 km closed circuit (helicopters, Class E1d):

***15 May 1973**

Roland Coffignot Istres 161.342 knots (299.000 km/h; 185.790 mph)

**still unbeaten in 1978*



(USA)

SKYLAB SPACECRAFT

Launched 14 May 1973 (Skylab 1)

Data: Skylab 1 orbital workshop

Launcher: Saturn IB

Length: 17.86 m (58 ft 7 in)

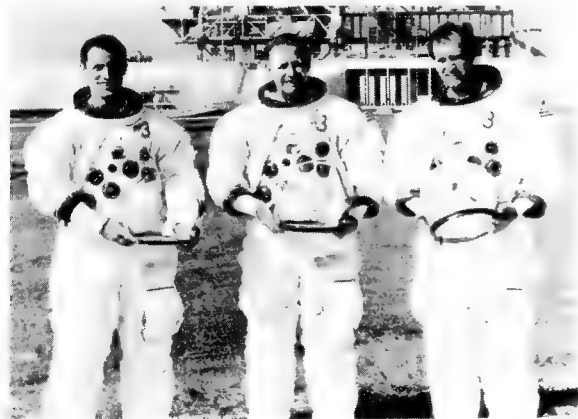
Diameter: 6.61 m (21 ft 8½ in)

Volume: 283.17 m³ (10,000 cu ft)

Total weight at launch: approx 30,000 kg (67,000 lb)

Apogee: 235 nm (436 km; 271 miles)

Perigee: 228 nm (422 km; 262 miles)



Records: Skylab 4 crew

Absolute record for duration in Earth orbit (1,214 orbits):

**** 16 Nov 1973 to 8 Feb 1974**

Gerald P. Carr, William R. Pogue and Dr Edward G. Gibson 84 days 1 hr 15 min 30.8 sec

Record for duration for linked group flight:

***16 Nov 1973 to 8 Feb 1974**

Gerald P. Carr, William R. Pogue and Dr Edward G. Gibson 83 days 12 hr 32 min 12.05 sec

Record for distance in Earth orbit:

***16 Nov 1973 to 8 Feb 1974**

Gerald P. Carr, William R. Pogue and Dr Edward G. Gibson 29,934,068 nm (55,474,039 km; 34,469,903 miles)

Record for distance for linked group flight:

***16 Nov 1973 to 8 Feb 1974**

Gerald P. Carr, William R. Pogue and Dr Edward G. Gibson 29,747,207 nm (55,127,747 km; 34,254,728 miles)

***qualifying also as record for accumulated total time in space*

**since beaten by Soviet Salyut cosmonauts*

Opposite page: Skylab space station in orbit. Left: Astronauts Gibson, Carr and Pogue



First flight 16 February 1967

Four/five-seat general purpose helicopter

Data: BO 105C

Power plant: Two Allison 250-C20 turboshaft engines (each 400 shp)

Main rotor diameter: 9.82 m (32ft 2³/₄ in)

Length, excl main rotor: 8.55 m (28 ft 0¹/₂ in)

Height overall: 2.98 m (9 ft 9³/₈ in)

Main rotor disc area: 75.74 m² (815.26 sq ft)

Weight empty: 1,120 kg (2,469 lb)

Max T-O weight: 2,300 kg (5,070 lb)

Max cruising speed: 125 knots (232 km/h; 144 mph) at S/L

Service ceiling: 5,030 m (16,500 ft)

Max range with standard fuel, no reserves: 355 nm (656 km; 408 miles) at 1,525 m (5,000 ft)

Record for distance in a straight line (helicopters, Class E1d):

***20 Apr 1974**

Siegfried Hoffmann 925.335 nm (1,714.837 km; 1,065.548 miles)

**still unbeaten in 1978*

Opposite: D-HABV, the BO 105 flown by Siegfried Hoffmann. Left: Witnesses of the helicopter's arrival in Spain





First flight 25 March 1971

Medium/long range freight transport and refuelling tanker

Power plant: Four Soloviev D-30KP turboprop engines (each 12,000 kg; 26,455 lb st)

Wing span: 50.50 m (165 ft 8 1/4 in)

Length overall: 46.59 m (152 ft 10 1/4 in)

Height overall: 14.76 m (48 ft 5 in)

Wing area: 300.00 m² (3,229.17 sq ft)

Max T-O weight: 170,000 kg (374,785 lb)

Max cruising speed: 432 knots (800 km/h; 497 mph)

Nominal cruising height: 9,000-12,000 m (29,500-39,350 ft)

Nominal range with max payload of 40,000 kg (88,185 lb): 2,700 nm (5,000 km; 3,100 miles)

Records for speed with payload over a 1,000 km closed circuit:

*7 Jul 1975

Alexander Turumine 462.796 knots (857.657 km/h; 532.922 mph) with 30,000, 35,000, 40,000, 45,000, 50,000, 55,000, 60,000, 65,000 and 70,000 kg

Records for speed with payload over a 2,000 km closed circuit:

*4 Jul 1975

Alexander Turumine 462.278 knots (856.697 km/h; 532.326 mph) with 35,000, 40,000, 45,000, 50,000 and 55,000 kg

Records for speed with payload over a 5,000 km closed circuit:

*10 Jul 1975

Alexander Turumine 440.300 knots (815.968 km/h; 507.018 mph) with 15,000, 20,000, 25,000, 30,000, 35,000 and 40,000 kg

Records for height with payload:

*4 Jul 1975

Yakov I Vernikov 11,875 m (38,960 ft) with 60,000, 65,000 and 70,000 kg

Record for payload to height:

*4 Jul 1975

Yakov I Vernikov 70,121 kg (154,590 lb) to 2,000 m

**still unbeaten in 1978*



(USSR)

MIL A-10 (Mi-24 ?)

First flight 1971 (?)

Assault helicopter

Data: Mi-24 *Hind-A* (estimated)

Power plant: Two Isotov TV2-117A turboshaft engines (each 1,500 shp)

Main rotor diameter: 17.00 m (55 ft 9¼ in)

Length overall: 17.00 m (55 ft 9¼ in)

Height overall: 4.25 m (13 ft 11¼ in)

Main rotor disc area: 227.00 m² (2,443.41 sq ft)

Normal T-O weight: 10,000 kg (22,045 lb)

Max level speed: 162 knots (300 km/h; 186 mph)

Hovering ceiling in ground effect: 2,000 m (6,560 ft)

Normal range: 256 nm (475 km; 295 miles)

Record for speed over a 15-25 km course (helicopters, women):

*16 Jul 1975

Galina Rastorgoueva and Ludmila Polyanskaya 184.178 knots (341.320 km/h; 212.086 mph)

Record for speed over a 100 km closed circuit (helicopters, women):

*18 Jul 1975

Galina Rastorgoueva 180.478 knots (334.464 km/h; 207.826 mph)

Record for speed over a 500 km closed circuit (helicopters):

*1 Aug 1975

Galina Rastorgoueva 178.622 knots (331.023 km/h; 205.688 mph)

Record for speed over a 1,000 km closed circuit (helicopters):

*13 Aug 1975

Galina Rastorgoueva 179.497 knots (332.646 km/h; 206.696 mph)

Records for time to height (helicopters, women):

*8 Aug 1975

Galina Rastorgoueva 3,000 m in 2 min 33.5 sec

*26 Aug 1975

Galina Rastorgoueva 6,000 m in 7 min 43.0 sec

**still unbeaten in 1978*

The identity of the Mil A-10 is unconfirmed, but it is thought to be related to the very formidable Mi-24 assault helicopter, known to NATO as 'Hind'



(USA)

LOCKHEED SR-71A

First flight 22 December 1964

Two-seat strategic reconnaissance aircraft

Power plant: Two Pratt & Whitney JT11D-20B (J58) bypass turbojets (each approx 10,430 kg; (23,000 lb st dry and 14,740 kg; 32,500 lb st with afterburning)



White markings under the SR-71A were added to facilitate ground tracking of the aircraft at extreme height

Wing span: 16.95 m (55 ft 7 in)

Length overall: 32.74 m (107 ft 5 in)

Wing area (nominal): 167.23 m² (1,800.00 sq ft)

Max T-O weight: 77,110 kg (170,000 lb)

Max level speed at 24,000 m (78,740 ft): more than Mach 3.0 (1,735 knots; 3,220 km/h; 2,000 mph)

Operational ceiling: above 24,400 m (80,000 ft)

Typical operational radius: 1,040 nm (1,930 km; 1,200 miles)

Range at Mach 3.0 at 24,000 m (78,740 ft) without refuelling: 2,589 nm (4,800 km; 2,982 miles)

Absolute record for speed in a straight line:

*28 July 1976

Capt Eldon W. Joersz and Maj George T. Morgan Jr
(USAF) 1,905.81 knots (3,529.56 km/h; 2,193.17 mph)

Record for speed over a 1,000 km closed circuit:

*27 July 1976

Maj Adolphus H. Bledsoe Jr and Maj John T. Fuller
(USAF) 1,818.154 knots (3,367.221 km/h;
2,092.294 mph)

Record for sustained height in horizontal flight:

*28 July 1976

Capt Robert C. Helt and Maj Larry A. Elliott
(USAF) 25,929.031 m (85,069 ft)
*still unbeaten in 1978

WORLD ABSOLUTE SPEED RECORDS
km/h

12 Nov 1906	Santos-Dumont 14-bis	41.292	26 Sep 1921	Nieuport-Delage Sesquiplane	330 275
26 Oct 1907	Voisin-Farman I	52.700	21 Sep 1922	Nieuport-Delage Sesquiplane	341 023
20 May 1909	Wright Model A	54.810	18 Oct 1922	Curtiss R-6	358.836
23 Aug 1909	Curtiss Golden Flyer	69.821	15 Feb 1923	Nieuport-Delage Sesquiplane	375 000
24 Aug 1909	Blériot Type XII	74 318	29 Mar 1923	Curtiss R-6	380 751
28 Aug 1909	Blériot Type XII	76.995	2 Nov 1923	Curtiss R2C-1	417 059
23 Apr 1910	Antoinette	77.579	4 Nov 1923	Curtiss R2C-1	429 025
10 Jul 1910	Blériot Type XI	106.508	11 Dec 1924	SIMB (Bernard-Hubert) V.2	448.171
29 Oct 1910	Blériot Type XI	109.756	4 Nov 1927	Macchi M.52	479.290
12 Apr 1911	Blériot Type XI	111 801	30 Mar 1928	Macchi M 52 bis	512.776
11 May 1911	Nieuport Type IIN	119.760	29 Sep 1931	Supermarine S.6B	655.800
12 Jun 1911	Blériot Type XI	125.000	10 Apr 1933	Macchi M.C.72	682.078
16 Jun 1911	Nieuport Type IIN	130.057	23 Oct 1934	Macchi M.C.72	709.209
21 Jun 1911	Nieuport Type IIN	133.136	30 Mar 1939	Heinkel He 100 V8	746.604
13 Jan 1912	Deperdussin Monocoque (1912)	145.161	26 Apr 1939	Messerschmitt Me 209 V1	755.138
22 Feb 1912	Deperdussin Monocoque (1912)	161.290	7 Nov 1945	Gloster Meteor F Mk 4	975.875
29 Feb 1912	Deperdussin Monocoque (1912)	162.454	7 Sep 1946	Gloster Meteor F Mk 4	991.000
1 Mar 1912	Deperdussin Monocoque (1912)	166.821	19 Jun 1947	Lockheed XP-80R Shooting Star	1,003.995
2 Mar 1912	Deperdussin Monocoque (1912)	167.910	20 Aug 1947	Douglas D-558-I Skystreak	1,031.178
13 Jul 1912	Deperdussin Monocoque (1912)	170.777	25 Aug 1947	Douglas D-558-I Skystreak	1,047.536
9 Sep 1912	Deperdussin Monocoque (1912)	174.100	15 Sep 1948	North American F-86A-1 Sabre	1,079.841
17 Jun 1913	Deperdussin Monocoque (1913)	179.820	19 Nov 1952	North American F-86D Sabre	1,124.137
27 Sep 1913	Deperdussin Monocoque (1913)	191.897	16 Jul 1953	North American F-86D Sabre	1,151.798
29 Sep 1913	Deperdussin Monocoque (1913)	203.850	7 Sep 1953	Hawker Hunter F Mk 3	1,171.000
7 Feb 1920	Nieuport 29V	275.264	25 Sep 1953	Supermarine Swift F Mk 4	1,184 000
28 Feb 1920	Spad-Herbertmont 20 bis	283.464	3 Oct 1953	Douglas XF4D-1 Skyray	1,211.746
9 Oct 1920	Spad-Herbertmont 20 bis	292.682	29 Oct 1953	North American YF-100A Super Sabre	1,215 298
10 Oct 1920	Nieuport 29V	296.694	20 Aug 1955	North American F-100C Super Sabre	1,323 095
20 Oct 1920	Nieuport 29V	302.529	10 Mar 1956	Fairey Delta 2	1,822.000
4 Nov 1920	Spad-Herbertmont 20 bis	309.012	12 Dec 1957	McDonnell F-101A Voodoo	1,943 500
12 Dec 1920	Nieuport 29V	313.043	16 May 1958	Lockheed YF-104A Starfighter	2,259 538

WORLD ABSOLUTE HEIGHT RECORDS

m

31 Oct 1959	Mikoyan E-66	2,388.000	29 Aug 1909	Antoinette VII	155
15 Dec 1959	Convair F-106A Delta Dart	2,455.772	18 Oct 1909	Wright Model A	300
22 Nov 1961	McDonnell F4H-1F Phantom II	2,585.425	1 Dec 1909	Antoinette	453
7 Jul 1962	Mikoyan E-166	2,681.000	7 Jan 1910	Antoinette	1,000
1 May 1965	Lockheed YF-12A	3,331.507	12 Jan 1910	Henry Farman	1,209
28 Jul 1976	Lockheed SR-71A	3,529.560	14 Jun 1910	Wright	1,335
			7 Jul 1910	Antoinette	1,384
			10 Jul 1910	Wright	1,900
			11 Aug 1910	Blériot Type XI	2,012
			3 Sep 1910	Blériot Type XI	2,582
			8 Sep 1910	Blériot Type XI	2,587
			1 Oct 1910	Henry Farman	2,780
			Oct 1910	Blériot Type XI	2,880
			31 Oct 1910	Wright	2,960
			8 Dec 1910	Blériot Type XI	3,100
			8 Jul 1911	Henry Farman	3,177
			9 Aug 1911	Blériot Type XI	3,190
			4 Sep 1911	Blériot Type XI	3,910
			6 Sep 1912	Blériot Type XI	4,900
			17 Sep 1912	Morane-Saulnier	5,450
			11 Dec 1912	Morane-Saulnier	5,610
			11 Mar 1913	Blériot Type XI	5,880
			28 Dec 1913	Nieuport monoplane	6,120
			27 Feb 1920	Packard-LePère Lusac-11	10,093
			18 Sep 1921	Packard-LePère Lusac-11	10,518
			5 Sep 1923	Nieuport 40	10,742
			30 Oct 1923	Nieuport 40	11,145
			25 Jul 1927	Wright F3W-1 Apache	11,710
			8 May 1929	Wright F3W-1 Apache	11,930
			26 May 1929	Junkers W34	12,739
			4 Jun 1930	Wright F3W-1 Apache	13,157

WORLD ABSOLUTE DISTANCE RECORDS

km

16 Sep 1932	Vickers Vespa VII	13,404	12 Nov 1906	Santos-Dumont 14-bis	0.22
28 Sep 1933	Potez 506	13,661	26 Oct 1907	Voisin-Farman I	0.77
11 Apr 1934	Caproni Ca 113	14,433	13 Jan 1908	Voisin-Farman I	1.00
14 Aug 1936	Potez 506	14,843	21 Mar 1908	Voisin-Farman I	2.004
28 Sep 1936	Bristol Type 138A	15,223	11 Apr 1908	Voisin-Delagrange II	3.925
8 May 1937	Caproni Ca 161	15,655	30 May 1908	Voisin-Delagrange III	12.75
30 Jun 1937	Bristol Type 138A	16,440	17 Sep 1908	Voisin-Delagrange III	24.125
22 Oct 1938	Caproni Ca 161 bis	17,083	21 Sep 1908	Wright Model A	66.60
23 Mar 1948	de Havilland Vampire Mk 1	18,133	18 Dec 1908	Wright Model A	99.80
4 May 1953	English Electric Canberra	19,406	31 Dec 1908	Wright Model A	124.70
29 Aug 1955	English Electric Canberra	20,083	25 Aug 1909	Standard Voisin (Paulhan)	134
28 Aug 1957	English Electric Canberra	21,430	26 Aug 1909	Antoinette VII	155.620
18 Apr 1958	Grumman F11F-1F Tiger	23,449	27 Aug 1909	Henry Farman III	180
2 May 1958	Sud-Ouest S.O. 9050 Trident II	24,217	4 Nov 1909	Henry Farman III	234.212
7 May 1958	Lockheed YF-104A Starfighter	27,811	20 Jul 1910	Blériot Type XI	392.750
14 Jul 1959	Sukhoi T-431	28,852	28 Oct 1910	Maurice Farman	465.72
6 Dec 1959	McDonnell F-4B Phantom II	30,040	11 Dec 1910	Blériot Type XI	515.90
14 Dec 1959	Lockheed F-104C Starfighter	31,515	30 Dec 1910	Maurice Farman	584.75
28 April 1961	Mikoyan E-66A	34,714	16 Jul 1911	Nieuport monoplane	625.00
25 Jul 1973	Mikoyan E-266	36,240	1 Sep 1911	Maurice Farman	722.94
31 Aug 1977	Mikoyan E-266M	37,650	24 Dec 1911	Nieuport monoplane	740.299
			11 Sep 1912	Maurice Farman	1,010.9
			13 Oct 1913	Henry Farman	1,021.2
			3-4 Feb 1925	Breguet XIX	3,166
			26-27 Jun 1926	Potez 550	4,305
			14-15 Jul 1926	Breguet XIX	4,715.9
			31 Aug-1 Sep 1926	Breguet XIX	5,174
			28-29 Oct 1926	Breguet XIX	5,396
			20-21 May 1927	Ryan NYP <i>Spirit of St Louis</i>	5,809
			4-6 Jun 1927	Wright-Bellanca W.B.2 <i>Columbia</i>	6,294
			3-5 Jul 1928	Savoia-Marchetti S.64	7,188.26

27-29 Sep 1929	Breguet XIX	7,905
28-30 Jul 1931	Wright J6	8,065
6-8 Feb 1933	Fairey Long Range Monoplane	8,544
5-7 Aug 1933	Blériot 110	9,104.7
12-14 Jul 1937	Tupolev ANT-25	10,148
5-7 Nov 1938	Vickers Wellesley	10,715.448
5-7 Nov 1938	Vickers Wellesley	11,520.421
12 Nov 1945	Boeing B-29B Superfortress	12,739.591
29 Sep-1 Oct 1946	Lockheed P2V-1 Neptune	18,081.99
10-11 Jan 1962	Boeing B-52H Stratofortress	20,168.78

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